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**ACIF**

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AUSTRALIAN COMMUNICATIONS INDUSTRY FORUM

**ACIF INTERCONNECTION MODEL**

ACIF G538 AUGUST 1999



ACIF Interconnection Model

This Model was issued in draft form for comment as DR ACIF G538.

First published as ACIF G538:August 1999

ISBN 1 74000 029 3

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## Explanatory Statement/Foreword

This document, produced by the ACIF, sets out an “Interconnection Model” (or framework). It describes the interconnection arrangements that have been developed from the introduction of full network competition in Australia after July 1997. The Model builds on earlier work, including:

- the Interconnection Model published by AUSTEL in March 1995;
- discussion in the NIIF, the predecessor to the ACIF, and
- commissioned input from Professor Peter Gerrand prepared for the ACIF.

This document has been developed by the Network Reference Panel of the ACIF to serve as a framework to guide interested parties considering interconnection in the Australian environment. The Interconnection Model identifies matters relevant to interconnection, as detailed either in Legislation, Regulations or ACIF Codes, Standards or Guidelines. The reader is requested to look at the relevant legislation, ACIF Codes and ACIF standards rather than rely on this overview to provide the necessary detail.

The ACIF believes this should be an evolving document. This first issue mainly covers interconnection between circuit switched networks under the arrangements that apply at the start of 1999. Later versions are likely to cover packet networks (including networks using Internet Protocols) and the Codes and Standards continuing to be developed by ACIF.

The earlier documents covered both the general conditions of interconnection, and specific details of charging arrangements between carriage service providers. In particular, the AUSTEL Interconnection Model covered the rights and responsibilities of Prime Service Deliverers (PSD).

The industry has been considering the appropriateness of two commercial principles based on those set out in the AUSTEL Interconnection Model, stating that the PSD for a service has the right to determine the retail tariffs for end-users of the service; and may establish commercial arrangements with Access Service Deliverers for third-party billing of participating users on behalf of the Prime Service Deliverer. There was no consensus to include these principles in this ACIF document, and an agreement that they should be considered in the Telecommunications Access Forum (TAF) as the appropriate self-regulation forum considering access issues.

Peter Darling  
Chair, ACIF Network Reference Panel

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# INTERCONNECTION MODEL

# 1 The Australian Telecommunications Environment

## 1.1 General

- 1.1.1 New telecommunications legislation came into force on 1 July 1997, defining the current Australian regulatory arrangements.
- (a) The **Telecommunications Act 1997** [TA'97] sets out the regulatory arrangements. The legislation "promotes the greatest possible use of industry self-regulation"<sup>1</sup> as the preferred means of resolving technical, operational and commercial issues that arise in supporting public network services that pass across carriers networks.
  - (b) The **Trade Practices Act 1994**, as amended by the Trade Practices Amendment (Telecommunications) Act 1997, sets out specific conduct and access arrangements for telecommunications. The legislation defined a role of the Telecommunications Access Forum (TAF) as the industry self-regulatory forum covering access issues.

## 1.2 Terminology

- 1.2.1 The terms 'carriers' and 'service provider' are used in different countries, and sometimes in different time frames within the same country, with differing meanings.
- 1.2.2 The Telecommunications Act 1997 creates specific meanings for these terms.
- (a) **Service providers** (SPs) - who as a class are subject to Rules set out in Schedule 2 of the Act - are defined as either carriage service providers or content service providers. A carriage service provider supplies a carriage service to the public using a network unit owned by a carrier; and a content service provider uses a carriage service to supply a content service to the public
  - (b) A **carrier** is defined as "the holder of a carrier licence" granted by the ACA; the term "carrier" does not imply an entity that is providing carriage services over a network. The TA'97 peppers many of its clauses with references to "carriers and carriage service providers" and "carriers or carriage service providers" instead of simply "carriage service providers" - because in the terminology of the TA'97, most but not all carriers are carriage service providers and only some network operators are carriers
- 1.2.3 The AUSTEL Interconnection Model developed in 1994-95 introduced the term "**Service Deliverer**", abbreviated SD, as a general term for what was then "carrier or service provider", and now, in the terms of the Telecommunications Act 1997, is any carriage service provider, including those who are also licensed carriers.
- 1.2.4 This term Service Deliverer and the abbreviation SD has been used extensively within the ACIF, and by its predecessor the NIIF, in developing new industry codes and technical standards. For consistency with other ACIF work and the AUSTEL Interconnection Model, the ACIF Interconnection Model continues to use the same terminology.

<sup>1</sup> Telecommunications Act 1997 (TA'97) S 4(a)

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## 2 FORMAL DEFINITIONS

### 2.1 Types of Parties

- 2.1.1 An **end-user** is the most general class of individual user of telecommunication services, whether content or carriage services.
- 2.1.2 **Customers** are legal persons (including businesses) that actually purchase, or agree to buy, telecommunication services.
- 2.1.3 The term **Service Deliverer (SD)** refers to any carriage service provider (whether a licensed carrier or not), as defined in the Telecommunications Act 1997.
- 2.1.4 A **carriage service** is a service for carrying communications by means of guided and/or unguided electromagnetic energy<sup>2</sup>.
- 2.1.5 A **Content Service Provider (CoSP)** is a party using a listed<sup>3</sup> **carriage service** to provide a content service to the public.
- 2.1.6 A **content service** can be either a broadcasting service or an information or entertainment content on-line service (e.g. using broadcast audio or video, recorded voice, digitised images, or a combination of these media)<sup>4</sup>.
- 2.1.6 An **Information Provider (IP)** is a party that provides information content to a Content Service Provider, for use by the CoSP in a Content service.
- 2.1.7 The **Commissioning Customer (CC)** for a service is the customer or end-user that agrees to contract with a Service Deliverer for that service.
- 2.1.8 Where a carriage or content service is provided to a Commissioning Customer through the provision of services by two or more Service Deliverers, the **Prime Service Deliverer (PSD)** for that service is defined to be the Service Deliverer who contracts to provide that particular service to the Commissioning Customer
- 2.1.9 Other participating Service Deliverers (i.e. other than the Prime Service Deliverers) are designated **Supporting Service Deliverers (SSDs)** for that service.
- 2.1.10 In the case of call-based services
- (a) the term **A Party** refers to the end-user that originates a call;
  - (b) the term **B Party** refers to the party whose number is dialled or otherwise transmitted to the Access Service Deliverer by the A Party as the address to which the call is to be routed.
  - (c) The term **terminating number** will refer to the network address to which a call is actually routed and terminated. This term is normally only used in cases where this number is different from the B Party number dialled by the A Party (e.g. in an intelligent network service where the routing of the call is varied according to instructions from the Commissioning customer); and
  - (d) The term **C (D, E, F...) Party** refers to a third (fourth, fifth, six...) party in a multi party service

<sup>2</sup> Telecommunications Act 1997, s. 7 Definitions

<sup>3</sup> Telecommunications Act 1997, s. 16

<sup>4</sup> Telecommunications Act 1997, s. 15

## 2.2 Types of Services and their Specialised Providers

- 2.2.1 An **Access Service** connects customers or end-users to other telecommunications services. An Access Service can be either an **Originating Access Service (OAS)** (for outgoing services) or a **Terminating Access Service (TAS)** (for incoming services), or both. The service can be provided by the owner of the facilities used, or by other Service Deliverers reselling service.
- 2.2.2 An **end-connect service** is a particular retail access service sold or delivered to the Commissioning Customer for that service, by an Access Service Deliverer.
- 2.2.3 A Service Deliverer that provides an Access Service is called an **Access Service Deliverer (ASD)**. An **Originating Access Service Deliverer (OASD)** provides an OAS, and a **Terminating Access Service Deliverer (TASD)** provides a TAS.
- 2.2.4 A **Transit Service** connects or interconnects other Service Deliverers.
- 2.2.5 A **Transit Service Deliverer (TrSD)** is any Service Deliverer that provides a Transit Service between Service Deliverers (e.g. between Originating and Terminating Access Service Deliverers).<sup>5</sup>

## 2.3 Points of Interconnection between SDs, and from ASDs to End-Users

- 2.3.1 Access Service Deliverers connect directly with their Commissioning Customers (either end-users of services or Content Service Providers) at **Network Termination Points (NTPs)**<sup>6</sup>.
- 2.3.2 The terms '**end-connect**', '**direct connection**' and '**termination**' are used to refer to the interfacing and interworking of SD networks with end-users' terminal equipment (including Content Service Providers equipment allocated to the end-user and installed on the end-user's premises).
- 2.3.3 Service Deliverers interconnect with each other at **Points of Interconnection (POI)**, both for switched (call-based) services and leased circuit services. The noun **interconnection** is used to refer to the interfacing and interworking of SDs at the functional level (e.g. as used in Access Agreements).
- 2.3.4 The **Gateway Function** provides the interface between two networks and may or may not be part of another exchange or switch.

## 2.4 Types of Network Numbers (defining classes of call-based services)

- 2.4.1 A **geographic number** has the meaning defined in Part 1 of Chapter 3 of the Telecommunications Numbering Plan 1997. Such a number is a public network number, used for the supply of a local service, which gives an indication of the general geographic location where the call terminates for applications such as local call charging.
- 2.4.2 A **special services number** has the meaning defined in Part 2 of Chapter 3 of the Telecommunications Numbering Plan 1997. Such a number is a public network number other than a geographic number or an emergency number.

<sup>5</sup> The Interconnection Model does not create an obligation to supply transit services across a network. They are established through commercial negotiations between SDs.

<sup>6</sup> The concept of Network Termination Points, set out in the Telecommunications Act 1991, has been retained to assist definition of interworking scenarios

- 2.4.3 A **mobile number** is a special services number allocated for the supply of a public mobile telecommunications service<sup>7</sup>. In the absence of portability, the first few digits of a mobile number identify the unique mobile network to which calls are routed.
- 2.4.4 A **global number** is a special services number, other than a mobile number, for which the geographical location of the corresponding Network Termination Point cannot be deduced from the digits of the number.

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<sup>7</sup> A Public Mobile Telecommunications Service is defined in s. 32 of the Telecommunications Act 1997

# INTERCONNECTION MODEL

### 3 GENERAL PRINCIPLES

Note: The text below refers to “Service Deliverers”. When service (particularly access service) is provided by a reseller (a service provider other than the network operator) to a customer, in general the reseller of service is the ASD rather than the owner of the network facilities.

#### 3.1 Rights and Responsibilities to Customers

##### Principle G1

3.1.1

A **Customer** for a service has the following rights and responsibilities which should be respected by all Service Deliverers providing a service:

- (a) The Customer should know before they use a service from whom they will receive a bill for the use of that service,
- (b) The Customer should know before they use a service the details of the service (e.g. if the service provides carriage only, carriage and content or content only) and the approximate price or rate of charge that applies for that service,
- (c) If the customer has been offered a choice and has made a choice with regard to a particular service in relation to the carriage of that service that choice made should be upheld by the relevant carriage service provider. (e.g. preselection choices, service provider access codes),
- (d) The Customer should know whom to contact in case of difficulties/faults ,
- (e) For Carriage Services: where the calling customer has not explicitly selected a PSD for a particular call, the customer should receive consistent charges and charging/billing arrangements for all calls originating on the same access service and terminating on a particular range in the number plan irrespective of the identity of B-Party ASD or PSD (A-Party charges and charging/billing arrangements should not be dependent upon the B-Party ASD/PSD),
- (f) For information/"content" services: the customer should receive consistent charging/billing arrangements for all calls originating on the same access service and terminating on a particular range in the number plan. (actual charges will vary with the “value” of the information/“content”).

3.1.2

Service Deliverers should provide sufficient information to their customers to enable these principles to be understood and appreciated.

#### 3.2 Rights and Responsibilities of Service Deliverers

##### Principle G2

3.2.1

All **Service Deliverers** should work to ensure that a Service Deliverer providing a service

- (a) is able to develop and implement services using appropriate number ranges allocated by the ACA,
- (b) has confidence that other Service Deliverers will allow their customers access to services provided on those number ranges in a fair and equitable manner.

## Principle G3

- 3.2.2 The **Prime Service Deliverer (PSD)** has the following rights and responsibilities. The Prime Service Deliverer for a service
- (a) deals with the Commissioning Customer as contractor for the service,
  - (b) deals with the Supporting Service Deliverers that provide access or transit for this service,
  - (c) arranges and is accountable to the Commissioning Customer for the end-to-end operational performance of that service,
  - (d) has the right to determine the tariff for the Commissioning Customer for this service. Any tariffs determined need to be consistent with the National Numbering Plan categories<sup>8</sup>,
  - (e) negotiates with any Supporting Service Deliverers to determine interconnection or access charges payable by the PSD Deliverer to the other Service Deliverers. Alternatively the PSD may enter into an agreement with a single Service Deliverer (e.g. a peering agreement) to cover a range of termination services, including this service.

## Principle G4

- 3.2.3 In the case where a service is provided exclusively by a single Service Deliverer, then as a corollary of G3, that sole Service Deliverer is the PSD and is accountable to the Commissioning Customer for the end-to-end operational performance of the service, between the corresponding Network Termination Points that connect the end-users.

## Principle G5

- 3.2.4 The **Supporting Service Deliverer** arranges and is accountable for delivering a service with agreed functionality, within agreed performance limits, to the Prime Service Deliverer. The SSD is only accountable for delivering a service over those elements it directly controls.

## Principle G6

- 3.2.5 As a corollary of G5, where an **Access Service Deliverer** acts as Supporting Service Deliverer to the Prime Service Deliverer of a specific service, the Access Service Deliverer is responsible to the PSD for the performance of that service between the participating end-user's Network Termination Point and the Point of Interconnection to the PSD. The functions to be supported at a Point of Interconnection are identified in an Interconnection Service Definition document agreed between the interconnecting Service Deliverers.
- 3.2.6 This requirement is subject to the Prime Service Deliverer meeting agreed technical and operational specifications for the Point of Interconnection.
- 3.2.7 This functionality may be identified through a Service Definition Document developed by ACAF or ACIF. Subject to the Standard Access Obligations<sup>9</sup>, the Access Service Deliverer is required to meet the functionality defined in the relevant Service Declaration.

<sup>8</sup> The ACAF, as the Telecommunications Access Forum, is investigating the procedures by which the tariff is set, the respective roles of the ASD and PSD, and the possibility of third party billing of participating users

<sup>9</sup> Section 152AZ of the *Trade Practices Act 1974* deals with standard access obligations

### 3.3 Responsibilities for dealing with customer complaints

#### Principle G7

- 3.3.1 The responsibility for management of a complaint and communication back to a caller lies with Service Deliverer who receive a complaint from a complainant, if the service is carried on that Service Deliverer's network.
- 3.3.2 If the service is not carried on the network of the Service Deliverer receiving the complaint, the complainant should be referred to the appropriate Access Service Deliverer for that call for initial attention.
- 3.3.3 In most cases, the fault is reported to the caller's Access Service Deliverer, although the Access Service Deliverer and Prime Service Deliverer may agree that the Access Service Deliverer will advise customers to report faults directly to the Prime Service Deliverer.
- 3.3.4 A typical scenario would be:
- (a) A fault is reported by either
    - (i) the customer who is directly experiencing the problem,
    - (ii) another party reporting on behalf of the customer,
    - (iii) another party experiencing a problem with the particular service, or
    - (iv) a Service Deliverer who detects a customer or network fault.
  - (b) The fault is passed on to the customer's Access Service Deliverer, who determines if the fault is in customer equipment, in the Access Service Deliverer's network or in the network of other Service Deliverers.
  - (c) If the fault is in customer equipment or the Access Service Deliverer's network, then the fault is handled by the Access Service Deliverer. The interaction between the customer and their Access Service Deliverer is defined in the ACIF's Consumer Complaint Handling Industry Code<sup>10</sup>.
  - (d) If the fault is beyond the Access Service Deliverer's network, then the fault is handled as described in the ACIF Customer and Network Fault Management Industry Code<sup>11</sup>.

### 3.4 Responsibility of Service Deliverers for Universal Accessibility

#### Principle G8

- 3.4.1 Any Service Deliverer implementing a carriage service using a number specified in the National Numbering Plan (or within an international electronic addressing Plan endorsed by ACIF), should make that carriage service accessible by routing to and from any other Service Deliverers, where such routing is required to achieve the objective of any to any connectivity expressed in the Trade Practices Amendment (Telecommunications) Act 1997, subject to
- (a) any contractual agreements between Prime Service Deliverers and Supporting Service Deliverers on price and performance, and/or
  - (b) the use of call-screening features which may be legitimately used by, or in relation to, the Commissioning Customer in a

<sup>10</sup> Under development by the ACIF

<sup>11</sup> ACIF C513 — Industry Code — Customer and Network Fault Management

competitively fair manner to control access (e.g. use of unlisted numbers, CLI screening, PIN numbers, call barring<sup>12</sup>, and/or

- (c) compliance by Commissioning Customers with their obligations to meet the terms and conditions of the service, including payment of bills. To the extent that it is possible to supply services independently, no SD should be able to deny access by a customer to another SD's services because of its own dispute with that customer. However it is recognised that failure by a commissioning customer to pay for an end-connect service may prejudice its right to achieve interconnection to other SDs via that access service.

## 3.5 Normal requirements for Points of Interconnection for Service Deliverer narrowband services

### Principle G9

3.5.1 Interconnection between an Access Service Deliverer and other SDs to support telephony-based services, normally takes place at a Point of Interconnection located on the trunk side of a digital exchange of the Access Service Deliverer. The interface will generally provide SS7 functionality, using non-proprietary technical standards<sup>13</sup>, including provision of CLI to identify outgoing calling lines within the Access Network.

### Principle G10

3.5.2 Where an Access Service Deliverer provides facilities within an exchange building for Points of Interconnection to two or more other Service Deliverers, it may at its discretion also allow direct interconnection between the POIs of those other SDs, without the necessity of interworking through its own network.

## 3.6 Information Flow across the Point of Interconnection

### Principle G11

3.6.1 The Australian regulatory environment imposes a number of obligations upon network operators (carriers and carriage service providers) including<sup>14</sup>:

- (a) Compliance with the *Telecommunications Access Code* developed by the Telecommunications Access Forum<sup>15</sup> and approved by the ACCC, as set out in the TA 1997,
- (b) For carriers, compliance with *carrier licence conditions*,
- (c) Compliance with any service provider rules,
- (d) Compliance with Industry codes *registered* by the ACA, where the ACA directs a particular participant in the telecommunications industry to comply with the code,
- (e) Compliance with any *industry standard* developed by the ACA, if there are no industry codes or if an industry code is deficient,

<sup>12</sup> The procedures for access barring should be in accordance with operations code(s) of practice developed by the ACIF, in particular *ACIF C504 — Industry Code — Customer Barring*

<sup>13</sup> The arrangements for interconnection signalling should be in accordance with the standards developed by the ACIF, except where variations are agreed bilaterally. The relevant current ACIF specifications are *ACIF G500 — Specification — Signalling System No. 7 — Interconnect ISUP* and *ACIF G500sup — Specification — Signalling System No. 7 — Interconnect ISUP*

<sup>14</sup> This list is based on the summary of the Telecommunications Act 1997, and does not include all obligations for operation in Australian communications

<sup>15</sup> Formally titled the Australian Communications Access Forum, which is recognised by the ACCC as the TAF

- (f) Provision of untimed local calls,
- (g) Compliance with any ACA *performance standards* in relation to *customer service*,
- (h) Participation in the Telecommunications Industry Ombudsman scheme,
- (i) Compliance with ACA requirements in relation to *emergency call services*,
- (j) Protection of the *confidentiality* of communications,
- (k) Provision of an interception capability,
- (l) Compliance with ACA requirements for *pre-selection* in favour of carriage service providers,
- (m) Compliance with the ACA *numbering plan*,
- (n) Provision of calling line identification,
- (o) Provision of number portability in accordance with ACA Determinations and Directions by the ACCC.

3.6.2 The following information is passed across the point of interconnection between networks<sup>16</sup>:

- (a) Dialed number (B - Number), together with specified prefixes and suffixes which pass additional information about the call (see the ACIF Dial Plan<sup>17</sup>) which identify:
  - (i) Override originating access
  - (ii) Preselection originating access
  - (iii) Global number originating access
  - (iv) Terminating access
  - (v) Ported global number originating access
  - (vi) Terminating access ported number
  - (vii) Transit override call
  - (viii) Transit preselected call
  - (ix) Transit call to global number
  - (x) Transit call for terminating access to non-ported numbers
  - (xi) Transit call to ported global number
  - (xii) Transit call for terminating access to ported numbers
  - (xiii) Caller number (A - Number or CLI) in national significant number format

[CLI (Calling Number Identity) is a mandatory element provided for network operational purposes. e.g. billing and fault handling . Calling Number Display [CND] is a customer service provided as a source of information to the called party. CND may not be offered in all cases.],

<sup>16</sup> See ACIF G500 — Specification — Signalling System No. 7 — Interconnect ISUP and ACIF G500sup — Specification — Signalling System No. 7 — Interconnect ISUP

<sup>17</sup> In addition to the information passed within signalling elements, additional information is passed by adding digits to the dialled digits. This “dial plan” approach conveys information about the access required or provided for the call at that point of interconnection, along with identification of the network to which the call is directed . See ACIF G500 — Specification — Signalling System No. 7 — Interconnect ISUP and ACIF G500sup — Specification — Signalling System No. 7 — Interconnect ISUP

- (b) Calling Party Category (type of customer)  
identifies nature of calling origin  
e.g. CPC = Mobile customer, CPC = ISDN customer, etc,
- (c) Call diversion indication (indicating that the call has already been diverted),
- (d) Any Calling Number Display Presentation Indication,
- (e) Origin or Destination (future) Location information,
- (f) Information for call routing purposes or type of service requested by the customer, e.g. bearer service or teleservice,
- (g) Backward information on some services.

**The above information is indicative of the information exchanged. Relevant legislation, ACIF standards and codes should be consulted for regulatory and technical details.**

### 3.7 Identification of Parties for Various Classes of Services

#### Principle G12

3.7.1 The **Access Service Deliverer** is the Prime Service Deliverer for the **Access Service** to a Commissioning Customer, but is not necessarily the Prime Service Deliverer for the services to which this service provides access.

#### Principle G13

3.7.2 In the case of **preselected services** (including calls to **mobile services**), the Commissioning Customer is the customer corresponding to the A-Party who chooses a Service Deliverer for outward preselected calls. The Prime Service Deliverer is the particular Service Deliverer selected by the Commissioning Customer for its outward preselected calls. Where this PSD is different from the OASD, these calls are to be handed over at the Point of Interconnection (POI) nearest to the A-party location, unless agreed otherwise between these Service Deliverers.  
For calls to the fixed network, the Prime Service Deliverer should hand over calls to the TASD at a POI nearest to the B-Party, unless agreed otherwise between these Service Deliverers. For calls to a user of a mobile network, where the location of the called user is not known, calls are handed over to the TASD at the POI nearest the A-party or as mutually agreed.

#### Principle G14

3.7.3 For services subject to preselection (including calls to **mobile services**), where a **Pre-Selection Override Access Code** is dialled<sup>18</sup>, the Commissioning Customer is the customer corresponding to the A-Party who temporarily chooses the Service Deliverer. The Prime Service Deliverer is the particular Service Deliverer temporarily selected by the Commissioning Customer for that call. Where this PSD is different from the OASD, these calls are to be handed over at the Point of Interconnection (POI) nearest to the A-party location, unless agreed otherwise between these Service Deliverers.  
For calls to the fixed network, the Prime Service Deliverer should hand over calls to the TASD at a POI nearest to the B-Party, unless agreed otherwise between these Service Deliverers. For calls to a user of a mobile network, where the location of the called user is not known, calls are

<sup>18</sup> These codes can also be inserted in the network as specified in the ACIF Dial Plan. 3.7.3 only applies when the codes are dialled by the caller

handed over to the TASD at the POI nearest the A-party or as mutually agreed.

**Principle G15**

3.7.4 In the case of **global number services** (such as 1800, 1900 and 13 codes in the numbering plan), the customer contracting with the Service Deliverer to provide the global number for that particular service (generally the B-Party when the service is invoked) is the Commissioning Customer. The Service Deliverer providing the global number service to the Commissioning Customer is the Prime Service Deliverer. Calls should be handed over by the OASD at the Point of Interconnection nearest to the A party, unless agreed otherwise between the Service Deliverers, and depending on the network conditioning required. The PSD should hand over calls to the TASD at the POI nearest to the B-party location unless agreed otherwise between the Service Deliverers.

**Principle G16**

3.7.5 An **A Party originating a call to a global number** is regarded as using its end-connect service as a participating end-user of the global number service, but is not the Commissioning Customer (CC) for that service. The Commissioning Customer is the person who has a service provisioning contract with the Prime Service Deliverer. The A party's Originating Access Service Deliverer and any Transit Service Deliverers are the Supporting Service Deliverers to the global number Service Deliverer (which is the Prime Service Deliverer). In these cases and the B Party has an explicit contractual relationship (as the terminating party for inward calls) with the Prime Service Deliverer for the global number service. The A Party also has an explicit contractual relationship with the Originating Access SD that provides the end-connect service over which the OASD provides originating access to the PSD.

**Principle G17**

3.7.6 In the case of **calls to geographic numbers that are not SD-selected** (e.g. through preselection override access codes), the Commissioning Customer is the customer originating the call. The Originating Access Service Deliverer is the Prime Service Deliverer, and the Terminating Access Service Deliverer and any Transit Service Deliverers are the Supporting Service Deliverers. Current examples of calls to geographic numbers which are not SD-selected include local calls, calls from a mobile phone to a geographic number, and calls from an area where preselection has not been implemented<sup>19</sup>. These calls are to be handed over at the Point of Interconnection nearest to the B party location, unless agreed otherwise between the Service Deliverers.

**Principle G18**

3.7.7 In the case of **calls to mobile numbers**, the Commissioning Customer is the customer originating the call. The Originating Access Service Deliverer is the Prime Service Deliverer, and the Terminating Access Service Deliverer and any Transit Service Deliverers are the Supporting Service Deliverers<sup>20</sup>. These calls are to be handed over at the Point of Interconnection nearest to the A party location, unless agreed otherwise between the Service Deliverers.<sup>21</sup>

<sup>19</sup> Currently Cocos (Keeling) and Christmas Islands

<sup>20</sup> The ACA is currently investigating changes to this arrangement

<sup>21</sup> This arrangement may change following the ACA Decision in December 1998 to include calls to mobile numbers as part of the preselection process.

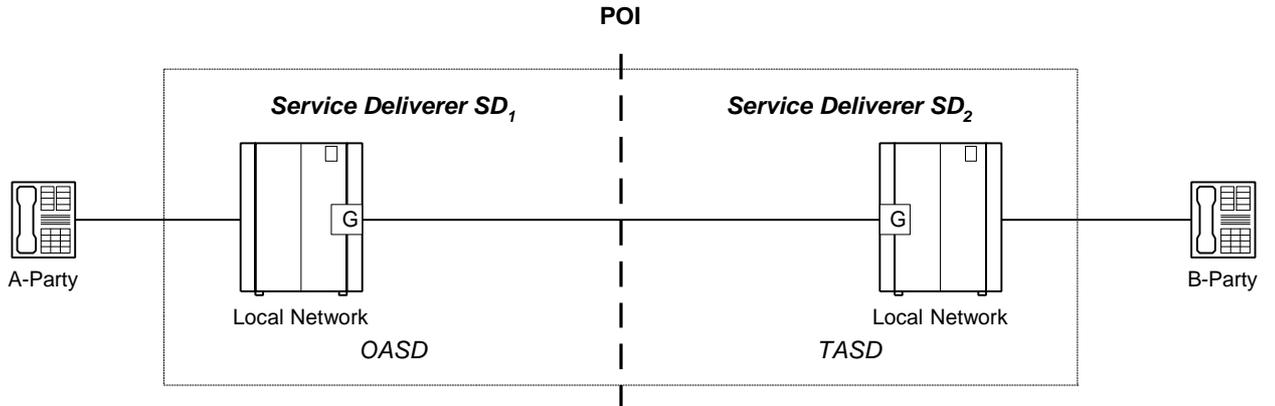


## 4 Application Examples

On the following pages are application examples for:

- (a) Local call (without Local Number Portability)
- (b) Preselected Long Distance Call
- (c) Global Number Services 13, 1300, 1800, 180x
- (d) Global Number Services 13, 1300, 1800, 180x with Number Portability
- (e) Mobile to PSTN Call
- (f) PSTN to Mobile Call
- (g) Mobile to Mobile Call
- (h) Local Number Portability service - two network scenario
- (i) Local Number Portability service - three network scenario

**Example (a): Local call (without LNP)**



Principle      Status of Parties

G17      CC = A-Party  
 G3      PSD = OASD=SD<sub>1</sub>  
 G5      SSD = TASD=SD<sub>2</sub>

Interconnection Responsibilities

G3: OASD (SD<sub>1</sub>) as PSD is accountable to the A-Party for the performance of the call.

G17: OASD hands over the call to the TASD nearest to the 'known' B-Party location, unless otherwise agreed between the SDs

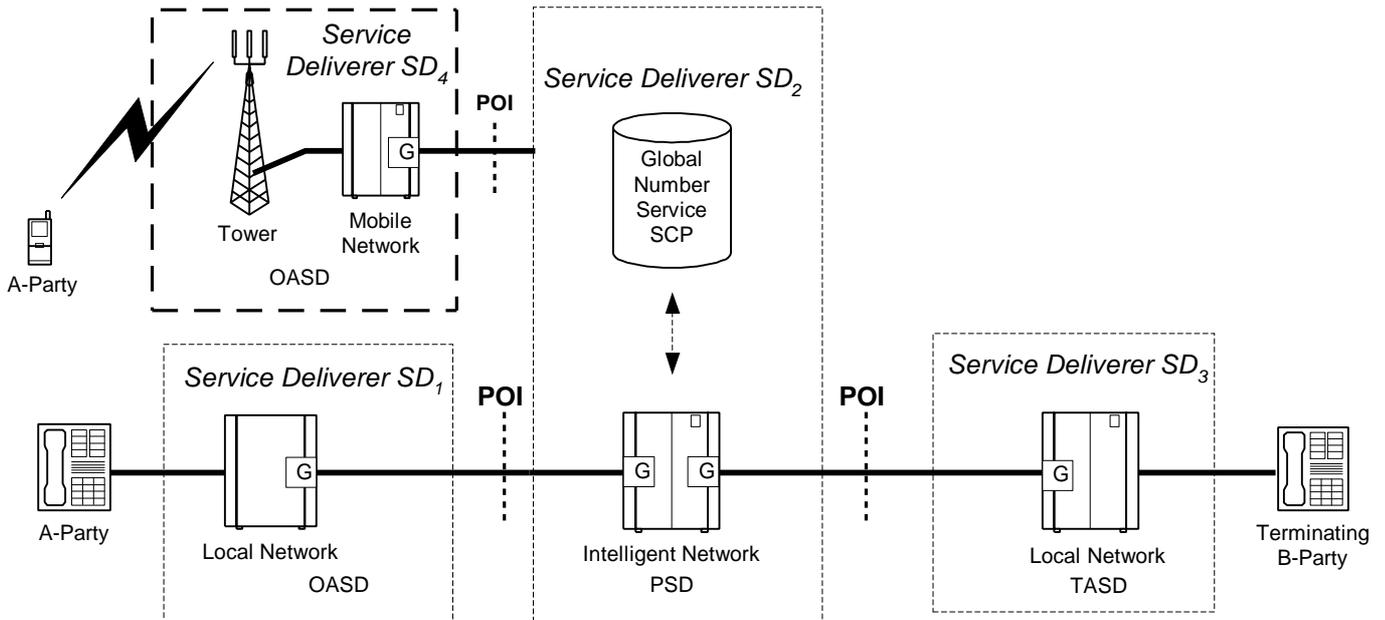
Key to Acronyms:

CC = Commissioning Customer  
 G = Gateway Function  
 OASD = Originating Access SD  
 POI = Point of Interconnection  
 PSD = Primary SD  
 SD = Service Deliver  
 SSD = Supporting SD  
 TASD = Terminating Access SD



## Example (c): Global Number Services 13, 1300, 1800, 180x

In this scenario, a call to the global number service is routed (by reference to number allocations to SDs under the Numbering Plan) to SD<sub>2</sub>, the provider of this particular global number service. The identity of SD<sub>2</sub> is determined by analysis of the initial digits of the dialled number. The call may originate on a fixed network, SD<sub>1</sub> or mobile network SD<sub>4</sub>. SD<sub>2</sub> uses its Service Control Point database to translate the dialled global number to a geographic network terminating number N<sub>B</sub>, corresponding to the terminating B-Party number. SD<sub>2</sub> then routes the call to the Terminating Access Service Deliverer SD<sub>3</sub> identified by the B-Party number.



Principle	Status of Parties
G15	CC = B-Party
G3	PSD = SD <sub>2</sub>
G5	SSDs are OASD = SD <sub>1</sub> or OASD = SD <sub>4</sub> and TASD = SD <sub>3</sub>

Interconnection Responsibilities

G3: SD<sub>2</sub> as PSD is accountable to the B-Party for the performance of the call.

G15: The OASD hands over the call to the PSD at a Point of Interconnection nearest to the A-Party location, unless otherwise agreed between the SDs.

G15: The PSD hands over the call to the TASD nearest to the B-party location, unless otherwise agreed between the SDs.

- Key to Acronyms:
- CC = Commissioning Customer
  - G = Gateway Function
  - OASD = Originating Access SD
  - POI = Point of Interconnection
  - PSD = Primary SD
  - SD = Service Deliver
  - SSD = Supporting SD
  - TASD = Terminating Access SD

MOLI (Mobile Origin Location Indication) is information provided by mobile network operators, and used by PSDs supplying global number based services such as 13XXXX, 1300XXXXXX, and 1800XXXXXX to provided Origin Dependent Routing services.

G3: SD<sub>2</sub> as PSD is accountable to the B-Party (and the A-Party) for the performance of any mobile dependent routing.

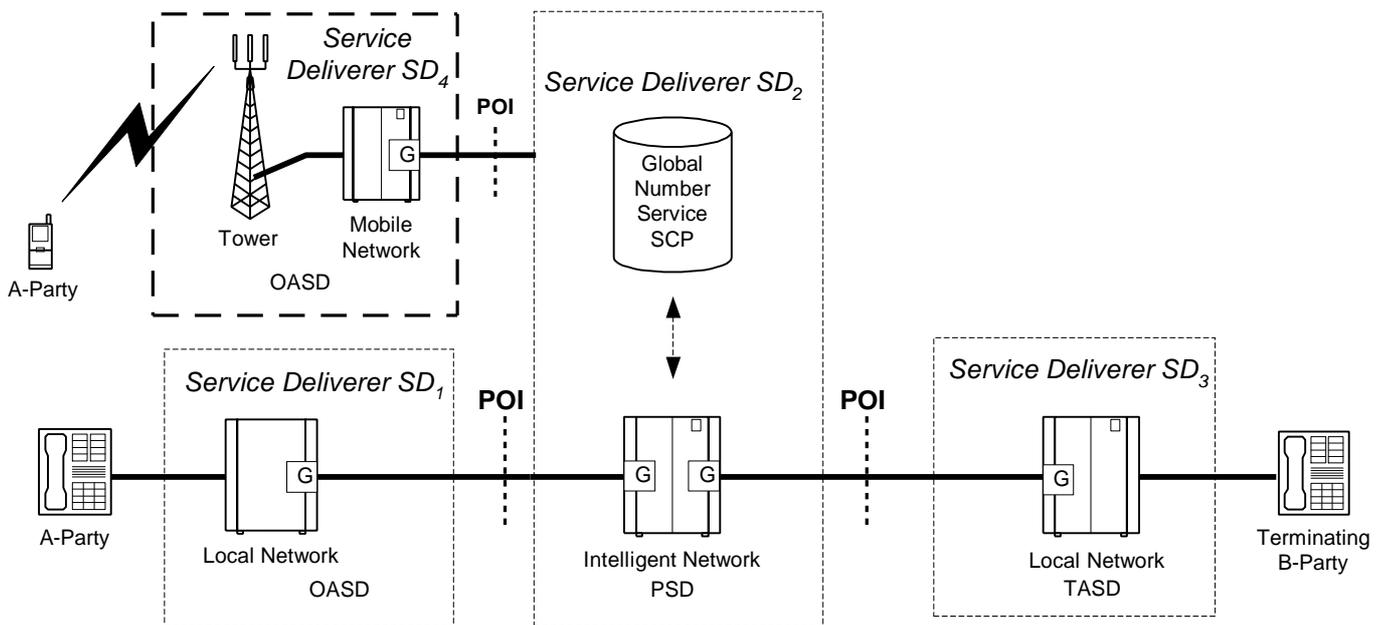
G5: OASD (SD<sub>1</sub>) as SSD is accountable for delivering the MOLI signalling information to the TASD (SD<sub>3</sub>) with agreed functionality, within agreed performance limits.

## Example (d): Global Number Services 13, 1300, 1800, 180x With Number Portability

In this scenario, a call to the global number service is routed (by reference to a local copy of the national reference database for number allocations to SDs) to SD<sub>2</sub>, the provider of this particular global number service. The identity of SD<sub>2</sub> is determined by analysis of the complete dialled number. The call may originate on a fixed network, SD<sub>1</sub> or mobile network SD<sub>4</sub>.

SD<sub>2</sub> uses its Service Control Point database to translate the dialled global number to a geographic network terminating number N<sub>B</sub>, corresponding to the terminating B-Party number.

SD<sub>2</sub> then routes the call to the Terminating Access Service Deliverer SD<sub>3</sub> identified by the B-Party number.



### Principle      Status of Parties

G15	CC = B-Party
G3	PSD = SD <sub>2</sub>
G5	SSDs are OASD = SD <sub>1</sub> or OASD = SD <sub>4</sub> and TASN = SD <sub>3</sub>

### Key to Acronyms:

CC = Commissioning Customer  
G = Gateway Function  
OASD = Originating Access SD  
POI = Point of Interconnection  
PSD = Primary SD  
SD = Service Deliver  
SSD = Supporting SD  
TASN = Terminating Access SD

### Interconnection Responsibilities

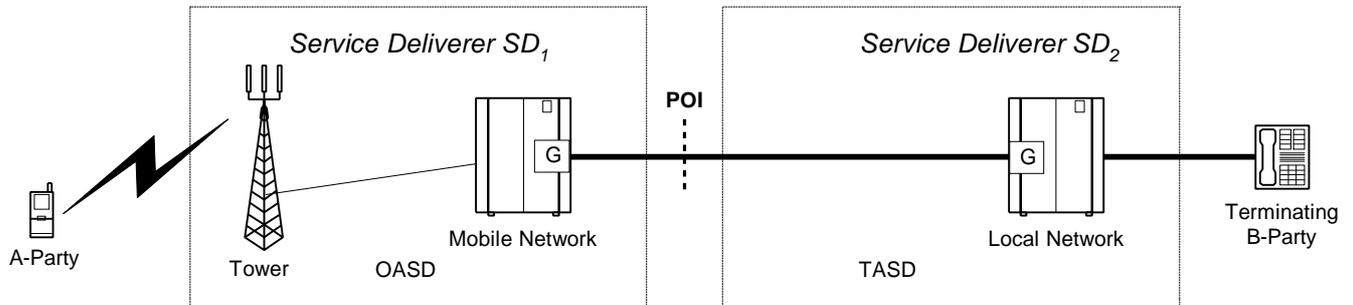
G3: SD<sub>2</sub> as PSD is accountable to the B-Party for the performance of the call.

G15: The OASD hands over the call to the PSD at a Point of Interconnection nearest to the A-Party location, unless otherwise agreed between the SDs.

G15: The PSD hands over the call to the TASN nearest to the B-party location, unless otherwise agreed between the SDs.

## Example (e): Mobile to PSTN Call

In this scenario, a geographical number is dialled from a mobile phone to a PSTN number allocated to another Service Deliverer.



Principle

G17  
G3  
G5

Status of Parties

CC = A-Party  
PSD = OASD = SD<sub>1</sub>  
SSD = TASD = SD<sub>2</sub>

Interconnection Responsibilities

G3: OASD (SD<sub>1</sub>) as PSD is accountable to the A-Party for the performance of the call.

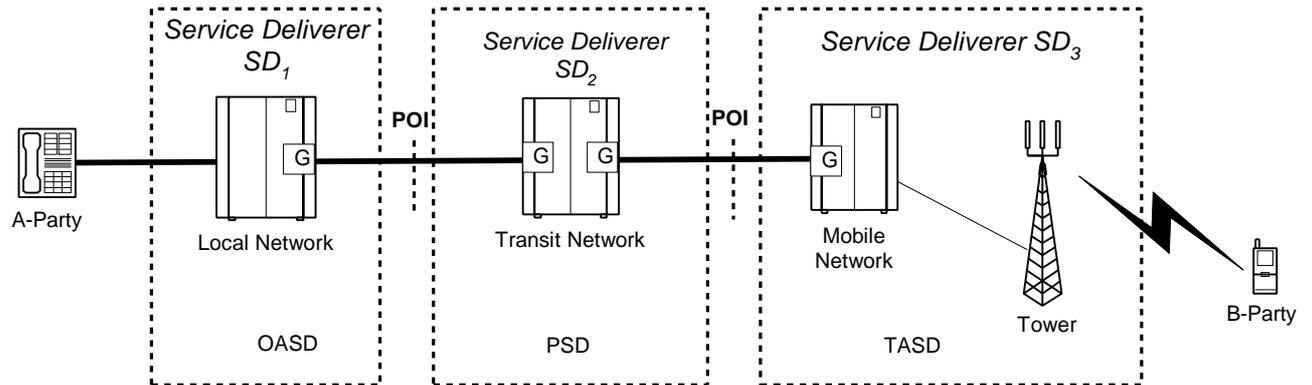
G17: OASD hands over the call to the transit gateway nearest to the B-Party location, unless otherwise agreed between the SDs.

Key to Acronyms:

CC = Commissioning Customer  
G = Gateway Function  
OASD = Originating Access SD  
POI = Point of Interconnection  
PSD = Primary SD  
SD = Service Deliver  
SSD = Supporting SD  
TASD = Terminating Access SD

## Example (f): PSTN to Mobile Call

In this scenario, a call to a Mobile number is routed according to the SD-specific Mobile number. (Number portability has not occurred in this example.) Preselection in accordance with ACA determination is shown.



### Principle

G13  
G3  
G5

### Status of Parties

CC = A-Party  
PSD = SD<sub>2</sub>  
SSD = TASD = SD<sub>3</sub>

### Interconnection Responsibilities

G3: SD<sub>2</sub> as PSD is accountable to the A-Party for the performance of the call.

G13: OASD hands over the call to the PSD nearest to the A-Party location, unless otherwise agreed between the SDs.

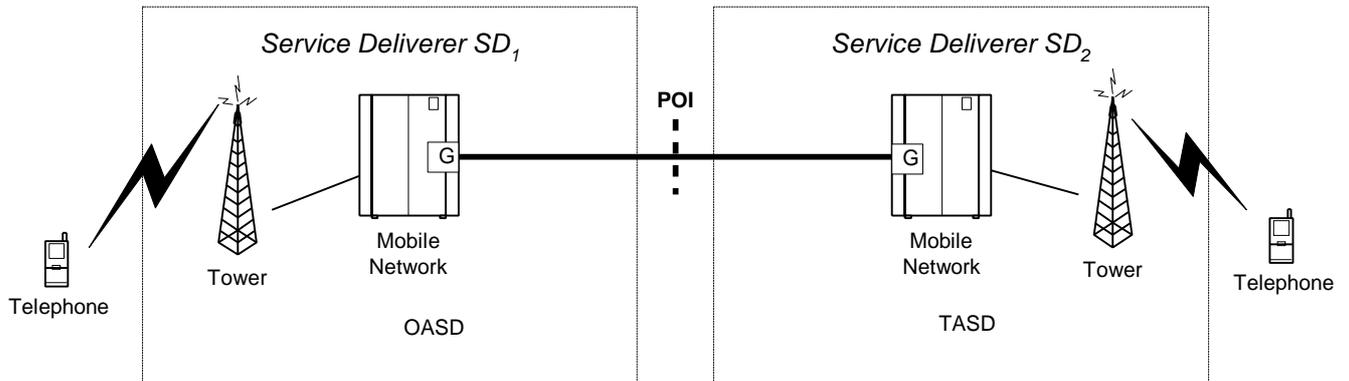
G13: PSD hands over the call to the TASD at the nearest POI to the A-Party, unless otherwise agreed between the SDs.

### Key to Acronyms:

CC = Commissioning Customer  
G = Gateway Function  
OASD = Originating Access SD  
POI = Point of Interconnection  
PSD = Primary SD  
SD = Service Deliverer  
SSD = Supporting SD  
TASD = Terminating Access SD

## Example (g): Mobile to Mobile Call

In this scenario, a call is dialled from a mobile phone to a mobile number allocated to another Service Deliverer.



Principle

G18  
G3  
G5

Status of Parties

CC = A-Party  
PSD = OASD =  $SD_1$   
SSD = TASD =  $SD_2$

Interconnection Responsibilities

G3: OASD ( $SD_1$ ) as PSD is accountable to the A-Party for the performance of the call.

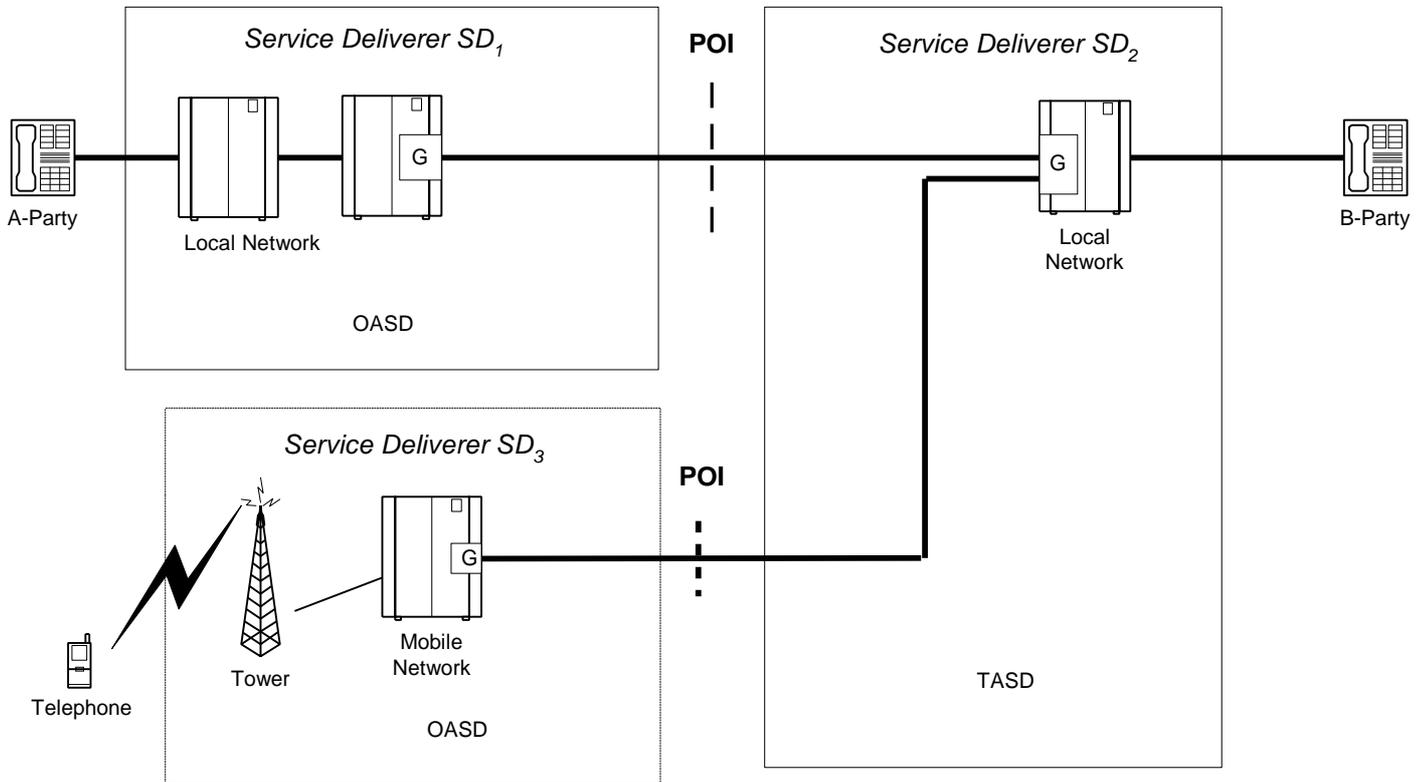
G18: OASD hands over the call to the TASD at a POI nearest to the A-Party location, unless otherwise agreed between the SDs.

Key to Acronyms:

CC = Commissioning Customer  
G = Gateway Function  
OASD = Originating Access SD  
POI = Point of Interconnection  
PSD = Primary SD  
SD = Service Deliver  
SSD = Supporting SD  
TASD = Terminating Access SD

## Example (h): Local Number Portability service -- two network scenario

In this scenario a customer directly connected to SD<sub>1</sub> or SD<sub>3</sub> calls a customer (by dialling a geographical number) who has ported their telephone number to service deliverer SD<sub>2</sub>. Calls could be made from SD<sub>1</sub>, shown as a fixed local network or SD<sub>3</sub>, shown as a mobile network.



### Principle

G17

G17

or

G 5

### Status of Parties

CC = A-Party

PSD = OASD = SD<sub>1</sub>PSD = OASD = SD<sub>3</sub>SSD = TASD = SD<sub>2</sub>

### Interconnection Responsibilities

G3: OASD as PSD is accountable to the A-Party for the performance of the call.

G17: Calls are to be handed over to the Point of Interconnection nearest to the B-Party location, unless otherwise agreed between the SDs.

### Key to Acronyms:

CC = Commissioning Customer

G = Gateway Function

OASD = Originating Access SD

POI = Point of Interconnection

PSD = Primary SD

SD = Service Deliver

SSD = Supporting SD

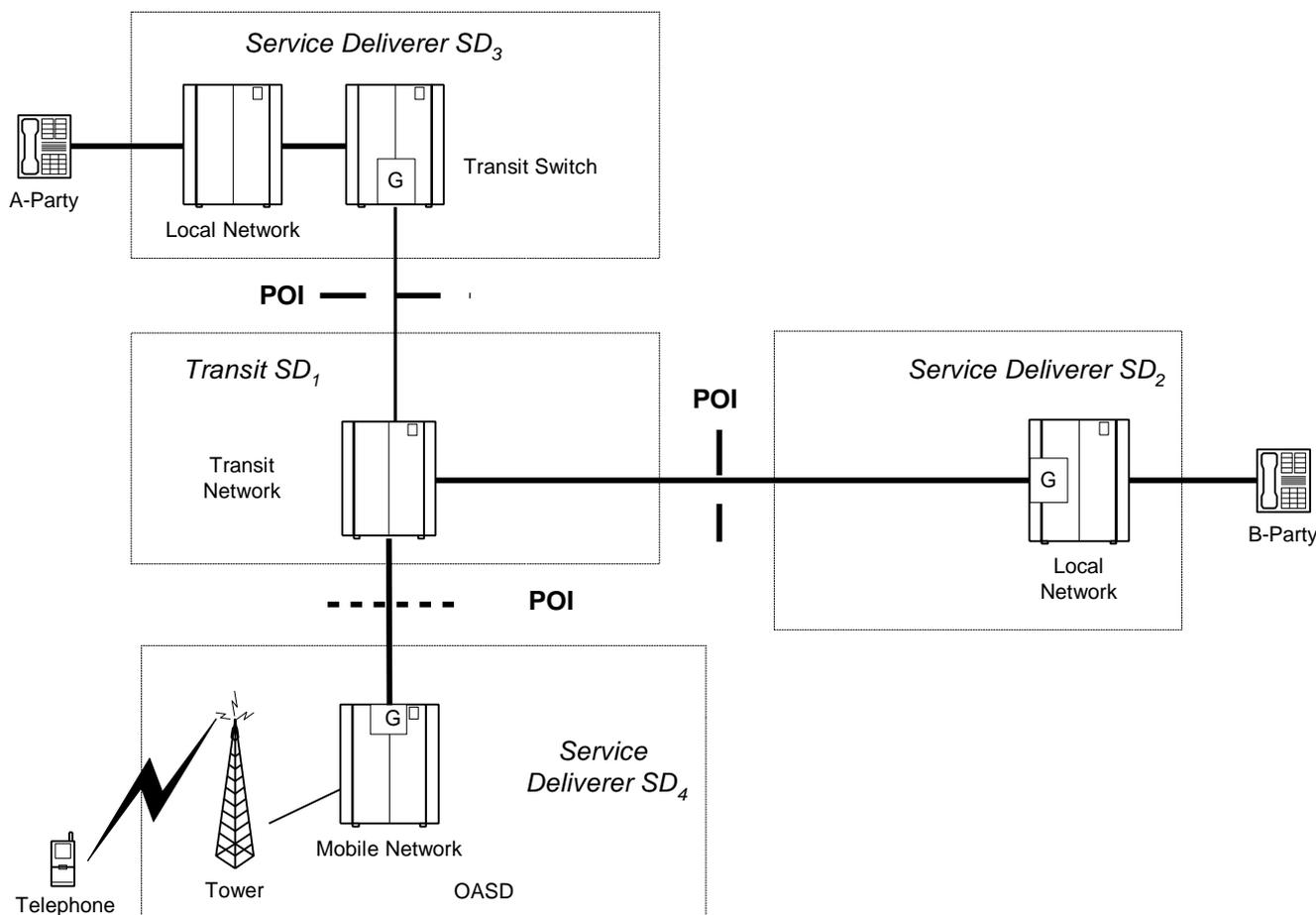
TASD = Terminating Access SD

Note: Some aspects of the handover arrangements are yet to be resolved and are the subject of current discussions before the ACCC

## INTERCONNECTION MODEL

### Example (i): Local Number Portability service -- three network scenario

In this scenario the A-Party, a customer directly connected to a third service deliverer  $SD_3$  or  $SD_4$ , calls a customer (dialling a geographical number) who has ported their telephone number from  $SD_1$  to another service deliverer  $SD_2$ . In this implementation of LNP, the OASD,  $SD_3$  or  $SD_4$  contracts the function of determining the correct TASD to a Transit  $SD_1$ . Calls to the B-Party are routed to Transit  $SD_1$ , and then rerouted to  $SD_2$ . The call could be made from  $SD_3$ , shown as a fixed network, or  $SD_4$ , shown as a mobile network.



#### Principle

G17

G17

or

G 5

#### Status of Parties

CC = A-Party

PSD = OASD =  $SD_3$

PSD = OASD =  $SD_4$

SSDs are TrSD =  $SD_1$   
and TASD =  $SD_2$

#### Interconnection Responsibilities

G3: OASD as PSD is accountable to the A-Party for the performance of the call.

G17: Calls are to be handed over to the Point of Interconnection nearest to the B-Party location, unless otherwise agreed between the SDs.

#### Key to Acronyms:

CC = Commissioning Customer

G = Gateway Function

OASD = Originating Access SD

LNP = Local Number Portability

POI = Point of Interconnection

PSD = Primary SD

SD = Service Deliver

SSD = Supporting SD

TASD = Terminating Access SD

Note: Some aspects of the handover arrangements are yet to be resolved and are the subject of current discussions before the ACCC

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*Published by:*

**THE AUSTRALIAN COMMUNICATIONS  
INDUSTRY FORUM LTD**

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