

**COMMUNICATIONS
ALLIANCE LTD**



**USER REQUIREMENTS FOR FUTURE LOCAL, MOBILE
AND 18/13 NUMBER PORTABILITY FOR AUSTRALIA**

COMMUNICATIONS ALLIANCE – WORKING
COMMITTEE 50

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1 PURPOSE

Options for number portability solutions are being considered by Communications Alliance in the context of future networks based on Internet Protocol (IP) working.

This paper identifies the user requirements for future number portability solutions, with a starting assumption that a single solution may be applicable across local, mobile and 18/13 number types.

Comments are welcome from end users of telecommunications services, equipment suppliers and carriers and carriage service providers. Noting in particular:

- Are the assumptions reasonable; and
- Are the use cases sufficient – or are any others required to be included?

When finalised, this document will be used in the evaluation of number portability solutions, with a view to meeting as many of the user requirements as possible.

2 BACKGROUND

Number portability is a key regulatory requirement in Australia for customers and the telecommunications industry. Different number portability solutions have been specified and deployed for porting of mobile, geographic (local) and 18/13/1300 numbers.

These number portability solutions were defined at a time when:

- a) voice was carried on circuit switched networks, with substantial differences in the technical capabilities of new and older network equipment;
- b) fixed line voice supply was intrinsically tied to the supply of an associated access line; and
- c) manual work was required in some situations to give effect to local number portability.
- d) market structures were simpler.
- e) customer expectations for porting times were aligned to the time required to establish a service with a new provider.

Number portability is still an important requirement to support competition and customer choice of service provider. However, circumstances have changed significantly and it is now possible to envisage that:

- a) voice will be carried over underlying IP data connections, on the access line and in the core network;
- b) many fixed voice solutions will be available separately from the supplier of the customer's IP data access line;
- c) network solutions for fixed, mobile and 1800/13/1300 calls may be converged onto a common IP based switching platform;
- d) networks are data driven, allowing automation of number portability functions; and
- e) customer expectations for number portability will align with current potential for rapid change in voice service provider.

This paper considers number portability requirements designed for an all IP environment from the perspective of various users – both end users of services and service providers involved in supplying voice services and delivering voice calls.

3 ASSUMPTIONS

3.1 Third Party Porting

Current local number portability processes make specific allowance for the case where a number is ported to another CSP, after at least one port has already taken place, and the gaining CSP is not the CSP that has been allocated the number range. In order to achieve minimum service disruption and to avoid the prospect of circular routing of calls a specific "third party port" process is currently defined.

In an all IP environment, it is assumed that updates about ported numbers can be rapidly shared amongst relevant networks and that therefore a third party port process will not be required. A further assumption is that third party porting shouldn't require any more steps than other porting.

Note that no such third party process is currently required for mobile numbers or 1800/13/1300 numbers.

3.2 Number Quarantine

Number quarantine processes differ between LNP, MNP and INP solutions at present.

For consistency and in order to allow improved customer service in situations where the customer needs to recover a number from quarantine, the assumption in this document is that the CSP who most recently served the customer will keep the number in quarantine for the required period and, for geographic and mobile number ranges, then return the number to the donor network¹.

3.3 Number Allocation Processes

Current processes are to allocate geographic numbers and mobile numbers in blocks and then for CSPs to issue numbers at the unit level for most consumer fixed telephone services and for mobile services. 1800/13/1300 numbers are allocated and issued at the individual number level.

There is an ongoing need for allocation and issue of blocks of geographic numbers for business and government customers. However, it may be possible in the future to deal with some geographic numbers and mobile numbers in a similar manner. The advantages would be greater numbering efficiency and reduced need for network conditioning. It is expected that the technical capabilities for number portability would facilitate single number allocation and issue for mobile and geographic numbers. This is a matter for further industry study.

3.4 Transfers vs Ports

The Numbering Plan requires that a customer can change service provider and retain their existing number for geographic, mobile and 1800/13/1300 numbers. Number portability is defined thus:

number portability means the right of a customer receiving a service in relation to a portable number to change the carriage service provider involved in providing the service, the carrier network involved in providing the service, or both, and retain the same telephone number.

¹ The donor network being the network that has been allocated the block of numbers, or had the block of numbers transferred to it.

Industry Codes for MNP and LNP define porting arrangements where there is both a change of carriage service provider² and a change of underlying service network³ involved. Change of carriage service provider in resale situations is essentially a change of billing provider, but the same underlying telecommunications service. This is more commonly referred to as a service transfer, and the existing mobile or geographic number is retained in the service transfer process.

This paper considers number portability from the Numbering Plan perspective. The need for simpler processes for service transfer situations should be considered during the evaluation of options for implementation. Overall requirements should not differ between those ports where change of network is involved and those ports where only change of service provider is involved.

3.5 Inter Operator Messaging

Currently providers use legacy network datalinks to send messages for porting processes, usually copper-based Frame Relay or ATM services for the access. The messages themselves are via File Transfer Protocol / Secure File Transfer Protocol (for LNP) or real time XML messaging (for MNP). Under the Migration Plan copper based access services have a limited lifespan and must be replaced by new solutions in future.

Any new solution should align with the principles in this document, whether that might be point to point links over nbn or other next generation technology, or entirely via IP. New solutions need to consider higher levels of encryption and security to ensure any personal and commercial information being transmitted is protected.

4 FUTURE USER REQUIREMENTS SPECIFICATION

4.1 Customer

The complexity of number portability increases as the quantity of numbers to be ported at the one time increases. Porting the number associated with a single line is the simplest case; porting the numbers associated with the multiple services of large business over several sites can be far more complex. Customer requirements for porting are considered in the following, starting with the simplest case and then considering the more complex cases.

4.1.1 Customer porting for a single number

This situation covers a large portion of single line telephone services supplied to residential customers who are porting a single geographic number. It also covers porting of a mobile number.

Porting for 18/13 numbers is typically a business user requirement and additional requirements are identified separately.

The customer requirements for a single number mobile or local number port are:

- minimal interruption to service;
- no limitations on choice of provider;
- no limitations on the choice of telephone service from a new provider;
- security of number rights of use (i.e. no number theft);
- rescue from quarantine; and
- minimal delay in overall service transition, including porting of number.

² The carriage service provider is the entity that contracts with the customer for the supply of the service.

³ The reference to carrier network in the numbering plan is inaccurate. An entity may operate a fixed voice network or a mobile voice network without necessarily being a carrier.

The additional customer requirements for a single number 18/13 number port are:

- ongoing delivery of calls to 18/13 numbers;
- ability to also port the underlying service delivery numbers separately; and
- ongoing use of 18/13 numbers purchased by the customer with extended rights of use.

4.1.2 Porting for small business

For small business, there may be multiple numbers associated with several services that need to be ported at the same time. So an additional requirement is:

- align porting of numbers for multiple services, e.g. if changing all services to a new provider.

A small business may also have multiple mobile services and may wish to port all of those numbers in a single transaction.

4.1.3 Porting for large business and government organisations

Large business and government organisations typically have blocks of geographic numbers issued to them so that in internal dial plan can be supported for extension to extension calling. Typically, a group of lines is used to support incoming lines, using the one directory number. And likewise, a group of outgoing lines may be used, with the calling number display set so that the directory number is shown. This supports customer call back. Change of service provider may be associated with considerable service establishment works, which must be coordinated with the number porting, and this is typically performed at a quiet time for the business. If there is a problem during the change-over process, it may be necessary to return to the original configuration so that the business or department can continue to function. So additional requirements are:

- service continuity to advertised numbers;
- support for porting groups/blocks of numbers;
- after hours' cutovers; and
- roll back capability.

A large business or government department may also have multiple mobile services and may wish to port all of those numbers in a single transaction.

4.2 **CSP [Not involved in the actual porting of the numbers, not operating the network that supplies service to the customer]**

CSPs that operate networks for telephone calls need to know where to send calls so that they can be directed to the customer via that customer's service provider. Timely information about where to send calls is needed when a number is ported so that calls are sent to the customers' new service provider and not to the old service provider. There are options on how this information might be relayed – for example, via broadcast messages, sent by the gaining service provider to all CSPs, or via a central data base, that is updated by the gaining service provider and queried as needed by CSPs.

In an environment where calls are carried over IP, it is expected that a single solution across geographic, mobile and 18/13 number types can be achieved.

There is a potential role for Portability Service Providers either:

- A. supplying information about ported numbers; or
- B. routing calls to ensure to ported and non-ported numbers.

Current obligations are expected to continue, in that the CSP seeking terminating access has the responsibility for determining the correct CSP for a number.

4.3 **CSP [operating the network the supplies service to the customer if not the gaining CSP or Losing CSP]**

A wholesale CSP, operating a network that supplies telephone services may have multiple CSPs who supply telephone services to customers. It is possible that a customer may port a number from one CSP to another and require no change in call routing functions.

The Wholesale CSP needs to be advised as there will be a change in commercial details with downstream CSPs. Other CSPs do not need to be advised of the change.

4.4 **CSP [Gaining CSP]**

Consistent processes across various number types are required for:

- Customer Authentication/Pre Port Validation;
- Port Request (notification);
- Port Request (make it happen now);
 - Timing here is important
- Quarantine;
- Number return to number block holder (where applicable⁴);
- Recover numbers from quarantine;
- Call routing;
- IPND update [update required from both the losing and gaining CSP]; and
- Implicit cancellation of the pre-existing voice service as part of the porting process.

4.5 **CSP [Losing CSP]**

Consistent processes across various number types are required for:

- response to any pre-port validation requests;
- call routing; and
- implicit cancellation of existing services and any necessary updates to internal records, sending of final accounts, update IPND, etc.

4.6 **CSP [Number block holder (if applicable)]**

The aim is that in an IP environment, there is no need for particular consideration for the number block holder (for geographic and mobile numbers). The number block holder continues to require information about where to send calls.

Return of numbers to the number block holder may be required where services are cancelled (if applicable⁵). This may vary for CSPs that issue numbers from a block of numbers that has been transferred from the block holder to the CSP.

⁴Numbers should be returned unless the block of numbers has been transferred to a carriage service provider as part of wholesale arrangements and that service provider requires the number to be available to issue to a customer at a future date.

5 INDUSTRY LEVEL ISSUES

- 1) A CSP may wish to migrate all services being resold from one underlying network operator to another. As it would be inefficient to build a separate solution for these circumstances the number portability arrangements should support change of wholesale network supplier with an objective of simple processes for the providers involved.
- 2) A CSP may go into liquidation and customers may wish to port their existing number to a new service provider. The number portability arrangements should support customers when their service provider goes into liquidation by enabling at least:
 - o individual customers to choose a new provider;
 - o the transfer of blocks of customers to a new provider(s) to support continued service delivery to customers; and
 - o flexible treatment of customers' requests for numbers where service may have been terminated, but ongoing rights of use to numbers can be confirmed.
- 3) Allow quarantine of numbers to occur at the retail CSP level, where CSP has a block of numbers transferred/porting to it from a wholesale CSP. This would apply to both number blocks and individual numbers.
- 4) Number portability arrangements should minimise obstacles to organisations' commercial operations.
- 5) Processes will be required for dealing with errors in the porting process.
- 6) Regular auditing of accuracy of porting data will be required (this may take a number of forms depending upon the end solution e.g. in the MNP distributed database approach data could be cross checked against registers or another party, such as a PSS).
- 7) It is assumed at this stage that allocation of numbers at a block level is still needed in an all IP environment for local and mobile numbers. Block number allocation is not needed now for 1800/13/1300 numbers. However, any number portability capability should be able to effectively deal with single number allocation as well as portability. [Consideration of the future need for number blocks is an issue for the Numbering Working Group in Communications Alliance].
- 8) The intention is to confine the number portability solution to aspects that are essential to number portability. Associated functions, but separate from portability include:
 - connection of the customer;
 - any services or service features supplied to the customer; and
 - any groupings of services with a current or proposed service provider
- 9) The intention is to adopt best practice to achieve efficiency of porting processes, call routing and infrastructure requirements.
- 10) Overall information about number portability would at a minimum register the CSP supplying services on a number, and the network operator supplying services on a number. Comments are invited on whether this should include any other provider involved in the supply of the telephone service to the customer.

6 USE CASES FOR PORTABLE NUMBERS

6.1 Geographic numbers

- A. Gaining CSP (GCSP) and Losing CSP (LCSP) are both supplying a local service and both are voice network operators (different voice network, access line can be legacy access or NBN). A particular case of this to consider is where the LCSP was the provider of an access service and the voice service and remains the supplier of the access service only (e.g. NBN service) and the gaining voice service provider supplies an over the top voice service.
- B. GCSP and LCSP are both supplying a local service, neither are voice network operators (i.e. both CSPs are resellers, one case where CSPs are reselling from the same voice network (B1) and one case where CSPs are reselling from different voice networks (B2)).
- C. GCSP and LCSP are both supplying a local service; one is not a voice network operator (i.e. one CSP is a reseller, and there are two potential cases, one case where the reseller is using same voice network as the other CSP (C1) and one case where the reseller is using a different voice network to the other CSP (C2)). Where "local service" has the same meaning as defined in the Numbering Plan.

6.2 Mobile numbers

- D. GCSP and LCSP supplying a mobile service, both are mobile network operators.
- E. GCSP and LCSP supplying a mobile service neither are mobile network operators (i.e. both CSPs are resellers, one case where CSPs are reselling from the same network (E1) and once case where CSPs are reselling from different networks (E2)).
- F. GCSP and LCSP supplying a mobile service, one is not a mobile network operator (i.e. one CSP is a reseller, and there are two potential cases, one where the reseller is using the same network as the other CSP (F1) and one case where the reseller is using a different network to the other CSP (F2)).

6.3 Inbound18/13/1300 numbers

- G. GCSP and LCSP supplying an Inbound service, both operate their own network.
- H. GCSP and LCSP supplying an Inbound service, neither operate their own network (i.e. both CSPs are resellers, one case where CSPs are reselling from the same network (H1) and once case where CSPs are reselling from different networks (H2)).
- I. GCSP and LCSP supplying an Inbound service, one is not a network operator (i.e. one CSP is a reseller, and there are two potential cases, one where the reseller is using same network as the other CSP (I1) and one case where the reseller is using a different network to the other CSP (I2)).

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.

Communications Alliance seeks to facilitate open, effective and ethical competition between service providers while ensuring efficient, safe operation of networks, the provision of innovative services and the enhancement of consumer outcomes.

It is committed to the achievement of the policy objective of the *Telecommunications Act 1997* - the greatest practicable use of industry self-regulation without imposing undue financial and administrative burdens on industry.



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