

Rules and Procedures for Number Portability

**Fixed to Fixed
Fixed to Mobile
Mobile to Fixed
Mobile to Mobile**

(Administrative & IT Processes)

Version 2.0

20th of May 2009

Approval information

The Project Leader Group (PLG) has approved the baseline document on.
The Samtrafik Group has approved the baseline document on.

Change control specification

The Project Leader Group (PLG) has approved the baseline document (without revisions).

This document will be amended (clarifications, corrections and improvements) by the Administrative Process Group (APG) and the Task Force Group (TF) as work progresses on Number Portability. These amendments will be circulated using e-mail for comments to both groups, and will be included in the next revision (e.g. Rev. A) of the document. If any differences cannot be resolved using e-mail, then a meeting will take place to resolve the differences. The revised document will have change marks to the baseline document.

The PLG will be asked to approve a specific revision of the document, which then will receive the next higher version number, and will contain change marks back to the previous version. The approved version will become the new baseline document.

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**Telecommunication Industries Association in Denmark / Working Group APG
Rules & Procedures for Number Portability / Administrative & IT Processes**

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1. Scope

This document outlines the administrative Rules & Procedures which has to be adhered to during the porting of telephone numbers, as proposed and agreed by the members and non-members of the Telecommunication Industries Association in Denmark.

All Operators who terminate traffic in the National Network shall adhere to these Rules & Procedures.

These Rules & Procedures shall interact with the Technical Rules & Procedures and be based on the agreement between the operators. In this document there will be references to the Standard Number Portability Agreement.

However not all issues will be solved in this document. Where this is the case, the different opinions of the Operators shall be identified and presented to the Telecommunication Industries Association in Denmark.

This document does not specify how to implement the access to the end-customer (e.g. Copper, Fibre, SIM Card), but is limited to identifying the need for establishment of access.

Only numbers that are in use or reserved can be ported.

The Operators Clearing House System shall be used to exchange the necessary ordering data between the Donor Operator and the Recipient Operator when establishing or changing Number Portability for a specific end-customer. The Transaction Document (APG96) defines the transactions used.

Function Charging is not number portability per se, but is included in this document because the resulting changes affects the charging of all calls terminated to the number, and as such other operators needs to be informed. The OCH System is the obvious solution for sharing this information.

Service Portability is not included in this document, but is mentioned to complete the reference framework. Service Portability requires that operators have the same products, between which numbers can be ported.

1.1. Regulation

The Number Act stipulates that Number Portability shall be implemented in Denmark in two phases.

Phase 1 included porting of 8-digit PSTN and ISDN numbers in the fixed network between operators in Denmark.

Phase 1 was implemented October 15th, 1999.

Phase 2 includes porting of 8-digit number between mobile networks and between the mobile and fixed networks.

Phase 2 (mobile to mobile) was implemented by July 1st, 2001. Phase 2 (mobile to fixed and fixed to mobile) is postponed.

OCH A/S has (also as a consequence of the Anti Terror Act (L219 § 15a) in progress) decided to enforce the principle about ensuring correct update of the field Service Operator.

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To avoid a forced direct connection of all Service Operators a new functionality has been implemented. This makes it possible for a Network Operator or an OCH direct connected Service Operator to update the Service Operator field on behalf of a Service Operator which is not directly connected to OCH.

Secured numbers, must in general refer to the 'Bekendtgørelse om sikring af offentlige telenet og teletjenester, nr. 1045 af 13. december 2001 om teleberedskab' (tele-readiness). The most important requirements are listed in cap. 3.3.4 Network Operators responsibilities.

1.2. Subsequent Porting

Subsequent Porting can be seen in Executive Order no. 714 (Udbudsbekendtgørelsen) where it is stated that porting of numbers:

"... implies that a number is retained by the end-customer when changing between providers of public telecommunications networks or telecommunications services, shall be realised between providers as porting from the provider who has been assigned the number by the National Telecom Agency, to the new provider with whom the end-customer will have his end-customer relationship"

The above quote is interpreted as a description of the number ownership and routing. The administrative process will be handled when a end-customer changes Operator a multiple number of times, i.e. subsequent porting. The current Operator is the Donor Operator and the new Operator is the Recipient Operator.

In case of subsequent porting from the Recipient Operator to a third Operator, the Operator who owns the number (Range Holder) shall not be directly involved in the order handling, but is informed of the porting along with the rest of the Operators.

Samtrafikgruppen and Projektledergruppen have approved the above interpretation.

1.3. Product Description

From an administrative perspective Operator Portability is a termination of a subscription with the current Operator and a new subscription with a new Operator.

1.3.1. Fixed to Fixed

Porting of one or more 8-digit fixed network numbers to fixed network between two network operators or service providers or combinations thereof, or within the same network operator or service provider.

This does not include 8-digits numbers that are in use or will come in use in OPS, ERMES or TETRA services.

1.3.2. Fixed to Mobile

Porting of one or more 8-digit fixed network numbers to mobile (GSM) network between two network operators or service providers or combinations thereof, or within the same network operator or service provider.

This does not include 8-digits numbers that are in use or will come in use in OPS, ERMES or TETRA services.

1.3.3. Mobile to Fixed

Porting of one or more 8-digit mobile (GSM) network numbers to fixed network between two network operators or service providers or combinations thereof, or within the same network operator or service provider.

This does not include 8-digits numbers that are in use or will come in use in OPS, ERMES or TETRA services.

1.3.4. Mobile to Mobile

Porting of one or more 8-digit mobile (GSM) network numbers to mobile (GSM) network between two network operators or service providers or combinations thereof, or within the same network operator or service provider.

This does not include 8-digits numbers that are in use or will come in use in OPS, ERMES or TETRA services.

1.4. Requirements

The Network Technical Group and the Charging Group has identified the following requirements, in order to be able to route and charge calls correctly in the network:

Requirement	Description
Telephone Number	The number that is being ported.
Operator Identity	Identity of the operator to whom the telephone number is ported. <i>The transaction document defines the field OperatorID.</i>
Geographical Information	The district (that is "Kommune") where the telephone number is assigned. If the number is active, the parameter identifies the district where the end-customer is located. If the number is not active, the parameter identifies the district where the SPC is located. This parameter is used – if instructed by the Porting Case - in relevant cases to define the charging and to route the call to an interconnect in the relevant region. <i>The transaction document defines the field Municipality code, where the special code '000' defines the whole of Denmark.</i>
Porting Case	Information defining which parameters in the administrative interface that shall be used for routing and charging. <i>The transaction document defines the field PortingCase, which holds the information.</i> The field PortingCase can have three values: 'NonPorted' (PortingCase 0 [NTG definition]), 'PortedWithGeo' (PortingCase 1) and 'PortedNonGeo' (Porting Case 2).
Routing Information	The equivalent number range (e.g. 4347 for numbers 43470000 to 43479999) to which the Telephone Number is ported, and has to be routed as belonging to this number range. In the originating network this information is used to route the call if instructed by the Porting Case. <i>The transaction document defines the field RoutingInfo, which holds the information.</i>

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Requirement	Description
Charging Information	The equivalent number range (e.g. 4347 for numbers 43470000 to 43479999) to which the Telephone Number is ported, and has to be charged as belonging to this number range. In the originating network this information is used to charge the call if instructed by the Porting Case. <i>The transaction document defines the field ChargingInfo, which holds the information.</i>
Interconnection Point	The information is the Network Indicator and the Signalling Point Code for the exchange. <i>The transaction document defines the field SPC, which contains the network indicator and signalling point code for the telephone number's current exchange.</i>

1.4.1. Porting Case NonPorted

If the Porting Case is NonPorted, then the Telephone Number is not ported, meaning that the routing and charging is unchanged. The Telephone Number may be resold, meaning that the Service Operator has changed.

1.4.2. Porting Case PortedWithGeo

If the Porting Case is PortedWithGeo, then

- the Telephone Number is ported to the fixed network with associated Geographic Information.
- call charging is done based on Geographical Information.

In this porting case, the following information is relevant for routing:

- Telephone Number
- Porting Case
- Operator ID
- Municipality
- Signalling Point Code

In this porting case, the following information is relevant for charging:

- Telephone Number
- Porting Case
- Municipality
- Operator ID

1.4.3. Porting Case PortedNonGeo

If the Porting Case is PortedNonGeo, then

- the Telephone Number is ported to a network with no associated Geographical Information (e.g. GSM, VMS, IN, 721x).
- call charging is not based on Geographical Information.

In this porting case, the following information is relevant for routing:

- Telephone Number
- Porting Case
- Operator ID
- Routing Information

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In this porting case, the following information is relevant for charging:

- Telephone Number
- Porting Case
- Operator ID
- Charging Information

The contents of the Routing Information can be different from the contents of the Charging Information. The valid values and their combinations are defined through interconnect agreements between the operators.

1.5. Assumptions

For the work in this document the following assumptions is made:

- Network Operators has connection to the Operator Clearing House System.
- Service Providers can have connection to the Operator Clearing House System. If that is not the case, then the Service Provider has to route information through the Network Operator, or a Service Operator with connection to the Operator Clearing House. How this is done and under which conditions fall outside the scope of this document.

2. Abbreviations and Definitions

2.1. Abbreviations

OCH	Operators Clearing House
NO	Network Operator
SO	Service Operator
SP	Service Provider
DO	Donor Operator
RO	Recipient Operator
RSO	Recipient Service Operator
RNO	Recipient Network Operator
RH	Range Holder
NTA	National Telecom Agency (Telestyrelsen).
PONS	Point Of No Stop
PONR	Point Of No Return
DDI	Direct Dial In
ICH	Internal Clearing House (at the Operator)
LUBO	Last Updated By Operator (The field is sometime called DSO (Direct Service Operator))

2.2. Definitions

Please refer to 2.3. Reference Model on page 18

Term

Power of attorney,
written

Definition

Written power of attorney including the end-customers signature (paperbased).

A paper based document where the end-customer gives power of attorney to MO to terminate the end-customers subscription agreement with AO with the intent of importing the end-customers number from AO to MO.

The document must contain the following:

- ICC number/Customer ID number (optional)
- The end-customers name
- The end-customers CVR-number (if business end-customer)
- The end-end-customers birth date (if private end-customer) [Optional]
- The end-customers address
- The phone number to be imported
- Order date
- Name of MO
- Name of AO
- The end-customers power of attorney to MO that MO can terminate the end-customers subscription agreement with AO in order to import the number to MO

The power of attorney is valid until the end-customer withdraws from MO according to Danish Law.

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Term

Power of attorney
Electronically based

Definition

An electronically based power of attorney without the end-customers physical signature.

An electronically based document where the end-customer gives power of attorney to MO to terminate the end-customers subscription agreement with AO with the intent of importing the end-customers number from AO to MO.

The document must contain the following:

- ICC number/Customer ID number
- The end-customers name
- The end-customers CVR-number (if business end-customer)
- The end-customers birth date (if private end-customer [Optional])
- The end-customers address
- The phone number to be imported
- Order date
- Name of MO
- Name of AO
- The end-customers power of attorney to MO that MO can terminate the end-customers subscription agreement with AO in order to import the number to MO

The power of attorney given by the end-customer is documented by checkmarks on a webpage. These checkmarks must not be default selected. It is assumed that the end-customers information can be send on unedited by MO to AO.

The power of attorney can also be given by e-mail where the end-end-customer received output of order – containing the above described informations – and a passage with following contents:

By returning this e-mail I [end-customers name] confirm that I hereby give permission to [MO] – on my behalf and according to the above described specifications – to terminate my subscription agreement with AO in order to import the number to MO.

The end-customer must return the e-mail, and the confirmed e-mail is the documentation for the given power of attorney.

The power of attorney is valid until the end-customer withdraws from MO according to Danish Law.

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Term	Definition
ICC	The field which contains the SIM-card number. The field is used when mobile numbers are ported. For porting of prepaid mobile numbers the field is mandatory. For porting of other mobile numbers it can be used as a substitution for exchanging the power of attorney between MO and AO. .
Customer-Id	The field which contains an end-customer identification (end-customer-number or account number at donor operator). The field is used when fixed numbers is ported. The field can be used as a substitution for exchanging the power of attorney between MO and AO. NOTE: The field can also be used to speed up the porting process according to the procedure described in section 4.3. In that case the field applies for both fixed and mobile numbers.
Portability	The number or service is now active at a different physical location or operator.
Service Portability	The service is now active at a different physical location or operator. Service portability is outside the scope of this document, and will most likely never be implemented because it requires that operators are producing the same services (products).
Number Portability	Number Portability currently consists of the terms Operator Portability, Geographic Portability and Function Portability.
Operator Portability	The number is now active at a different operator, and has, in case of fixed numbers, not moved geographically. From an administrative perspective Operator Portability is a termination of a subscription with the current Operator and a new subscription with a new Operator.
Standard Number Portability Agreement	The Standard Agreement on Number Portability which is enclosed to the Industry Agreement on Number Portability "Brancheaftalen".
The industry agreement on Number Portability "Brancheaftalen"	The Industry Agreement on Number Portability from [June 2009] or any later version of the Industry Agreement on Number Portability. The Industry Agreement on Number Portability is entered into by members of the Telecommunication Industries Association in Denmark (TI).
Bilateral aftale om Elektronisk Fuldmagt på Erhvervskunder	Bilateral Aftale om Elektronisk Fuldmagt på Erhvervskunder is an agreement wich can be entered into bilaterally between the operators.
Bilateral agreement on ICC solution	Bilateral agreement on ICC solution is an agreement wich can be entered into bilaterally between the operators
Bilateral agreement on Customer-ID solution	Bilateral agreement on Customer-ID solution is an agreement wich can be entered into bilaterally between the operators.
Appendix X	A document that contains the patterns of ICC numbers and Customer-ID numbers within each operator.

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Term	Definition
Geographic Portability	The fixed number is now active at the same operator, but has moved geographically, either to another Municipality or switch or both.
Function Portability	The number is now active at the same operator, but has a different Charging Info and/or different Network Type.
Operator Fixed to Fixed	Defines the porting of one or more numbers between the donor operator fixed network and the recipient operator fixed network.
Operator Fixed to Mobile	Defines the porting of one or more numbers between the donor operators fixed network and the recipient operator mobile network.
Operator Mobile to Fixed	Defines the porting of one or more numbers between the donor operator mobile network and the recipient operator fixed network.
Operator Mobile to Mobile	Defines the porting of one or more numbers between the donor operator mobile network and the recipient operator mobile network.
Geographic Fixed to Fixed	The fixed number is now active at the same operator, but has moved geographically, either to another Municipality or switch.
Function Fixed to Mobile	The number is being ported from Fixed Network to Mobile Network within the same operator.
Function Mobile to Fixed	The number is being ported from Mobile Network to Fixed Network within the same operator.
Function Charging	The number is now active at the same operator, but has a different Charging Info.
Donor Operator	The operator from which one or more numbers are in the process of being ported out.
Recipient Operator	The operator to which one or more numbers are in the process of being ported in.
Network Operator	The operator who operates a physical network and/or switch.
Service Operator	The operator, who provides services to its end-customers.
Other Operator	Any operator (service or network) connected to the OCH System.
Service Provider	A company whose business is to provide telecommunication services produced on other operator's physical network.
Range Holder	The operator who has been assigned the number in the physical network by the NTA.
Ported Number	One 8-digit number which is either ported from one operator to another operator, or ported from one geographical location to another geographical location, or ported from one function to another function

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Term	Definition
Number Act	"Lov om tildeling og anvendelse af nummerressourcer m.v." Lov nr. 392 af 10/6/1997.
Order Time	The time between the <NP Create> is received by the Donor Operator and the <NP Confirmation> is received by the Recipient Operator.
Retention Period	The time frame after a telephone number has been disconnected, but while an answering service might be active. During this period the end-customer can request that 'his' telephone number be reconnected. This timeframe is defined by the NTA.
Number Type I	Any single connection with one telephone number. This number type may be part of a hunt group.
Number Type II	More than one interdependent number or more than one interdependent connection or technically bundled groups (e.g. Direct Dial In (DDI), ISDN with MSN, Distinctive Ringing).
Point of Connection	When the Recipient Operator sends a <NP Create> order to the Donor Operator, the Recipient Operator must – in the order – inform the Donor Operator about who is doing the actual work of establishing the access.
In Use	A telephone number is In Use when it is activated in the network and as long as the subscription fee is paid.
Point of No Stop	This is the threshold, when passed, that a porting cannot be stopped when the Donor, Recipient Operator or OCH System sends an erroneous message. The cause of the error has to be found, corrected and the flow resumed. Point of No Stop occurs when OCH System has received the initial transaction (e.g. <NP Create>), accepted it and has sent the responding transactions (e.g. <NP OCH Order Number Response> and <NP Create>) to donor.
Point of No Return	This is the threshold, when passed, that a porting cannot be cancelled, but has to be completed. Point of No Return has only relevance in an Operator Porting Flow. Point of No Return occurs when OCH System has received and accepted the <NP Completion>.
GSM	This term covers both GSM-900 and GSM-1800 and UMTS.
Operator Identification	The operator identification ['0' + prefix] (for network operators) or ['00' + sequence number] (for service operators with direct connection to the OCH system), or ['08' + sequence number] (for service operators without direct connection to the OCH system).

Term	Definition
Termination Period	This is period that shall pass before the number can be ported. The Termination Period consist of two parts: 1) Time between notice to terminate and release from contract. (Opsigelsesperiode) 2) Minimum subscription period (Bindingsperiode) The two parts runs simultaneously (in parallel).
Reserved numbers	The number is reserved to a specific end-customer but is not currently in use in the network

When porting within one operator, that operator is both donor and recipient.

2.3. Reference Model

This figure is meant to describe the references between the terms used in Number Portability. Please refer to 2.2. Definitions on page 13.

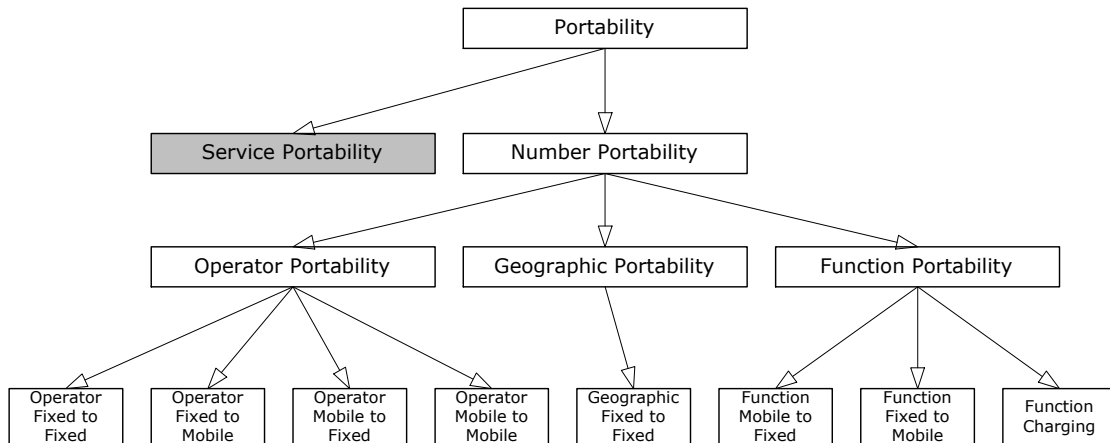


Figure 1 - Reference Model

Service Portability is not part of the scope of this document.

3. Implementing Number Portability between Operators

3.1. Relations between the Operators

The aim of this section is to set the common Rules & Procedures between the Operators for the administrative handling of ported numbers.

3.1.1. Interconnect/Number Portability Agreement

The implementation of Number Portability between two Operators shall be based on bilateral agreement, which can be based on the Standard Number Portability Agreement. The agreed set of Rules & Procedures must be added as an addendum to the existing Interconnect Agreement or in a Number Portability Agreement.

According to the Number Act, the suppliers of public telecommunication networks and telecommunication services shall comply with all reasonable requests for establishment or modification of Interconnect Agreements in order to implement Number Portability.

It is recommended that revised or new Interconnect/Number Portability Agreement should at least address the following issues:

- Definitions of what types (number ranges) of numbers that can be ported.
- The administrative cost to be paid by the Recipient Operator to the Donor Operator for the handling of Number Portability.
- Exchanging order data related to Number Portability for a specific end-customer.
- A reference to these Rules & Procedures for Number Portability in order to obtain a common reference platform.
- The use of the Operator Clearing House.
- Other business rules.

3.1.2. Handling of power of attorney

3.1.2.1. Minimum requirements (written power of attorney)

The written power of attorney must be send by fax, letter or e-mail to the donor operator, where it is validated with the received NP_Create, before the donor operator is replying with NP_Confirmation.

If nothing else has been agreed upon then this method must be complied to by all operators.

3.1.2.2. Using digital signature

As an option that may be agreed upon between two operators, the power of attorney with digital signature may replace the use of the written power of attorney with the end-customers physical signature. With this solution the donor operator must still receive the power of attorney (signed digitally) and the NP_Create before the porting is confirmed. By using the digital signature the time limits for confirming or rejecting the NP_Create may be shortened, if agreed between the two operators.

3.1.2.3. Electronically based power of attorney

Instead of using the minimum requirements as specified in 3.1.2.1 it is possible to use electronically based power of attorney, cf. clause 7.4 in the Standard Number Portability Agreement.

The electronically based power of attorney is given without the end-customers physical signature. The document must contain the following:

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- ICC number/Customer ID number, cf. appendix X (the latest version can be found on teleindu.dk)
- The end-customers name
- The end-customers CVR-number (if business end-customer)
- The end-customers birth date (if private end-customer) [Optional]
- The end-customers address
- The phone number to be imported
- Order date
- Name of MO
- Name of AO
- The end-customers power of attorney to MO that MO can terminate the end-customers subscription agreement with AO in order to import the number to MO

The power of attorney given by the end-customer is documented by checkmarks on a webpage. These checkmarks must not be default selected. It is assumed that the end-customers information can be send unedited by MO to AO.

The power of attorney can also be given by e-mail where the end-customer received output of order – containing the above described informations – and a passage with following contents:

By returning this e-mail I [end-customers name] confirm that I hereby give permission to [MO] – on my behalf and according to the above described specifications – to terminate my subscription agreement with AO in order to import the number to MO.

The end-customer must return the e-mail and the confirmed e-mail is the documentation for the given power of attorney.

The power of attorney is valid until the end-customer withdraws from MO according to Danish Law.

3.1.2.4. ICC/CustomerID solution

Instead of using the minimum requirement as stated in 3.1.2.1 and forwarding the power of attorney to the donor operator the ICC/CustomerID solution can be used for validation, cf. Bilateral Agreement on ICC Solution. When using the ICC/CustomerID solution the recipient operator holds the power of attorney for a period of time and forwards the power of attorney to the donor operator on request.

If donor operator wants to request a sample/random check then the recipient operator must forward the power of attorney within 5 working days. See second picture on page 21.

It is required to forward the request for random check on e-mail. The e-mail must contain the following information:

Emne/Subject: Krav om fuldmagt/Valid end-customer relationship/Tvivl eller Stikprøve.
Text: <TelephoneNumber>. As a response to this the power of attorney must be sent by e-mail.

A donor can at the most request samples/random check of 5% of the total amount of exports per recipient within a month.

If agreed upon to use the ICC/CustomerID solution for validation the ICC/CustomerID information must be sent within the NP Create. The donor operator may confirm or reject the

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NP_Create immediately upon receive of the transaction without further documentation, or the donor operator may request the power of attorney to be forwarded.

If using the ICC/CustomerID solution the reject code 376 is no longer relevant.

3.1.2.5. ICC number analysis

When using ICC solution it can be necessary to ask donor operator for an ICC-number analysis to avoid inconvenience for the end-customer. It is optional for the operator to offer the ICC-number analysis.

ICC-number analysis can only be used for end-customers that contain more than 25 Mobil numbers.

A valid end-customer-relationship must be in place when recipient operator asks for an ICC-number analysis at the donor operator.

The request for a number analysis must be sent by e-mail and must contain:

Model A:

Request: CVR-number + CustomerID

Answer: All mobil numbers + ICC numbers that belongs to the CVR number

Model B:

Request: CVR-number + CustomerID + mobilnumbers (x-numbers)

Answer: Mobil numbers + ICC numbers (x-numbers)

Donor operator can ask for samples/random check for valid end-customer-relationship. The end-customer-relationship must be in place at the time for the number analysis. Recipient operator must forward the documentation of valid end-customer-relationship within 5 working days.

The request from donor operator of samples/random check for valid end-customer-relationship must not cost any delays on forwarding the result of the number analysis. The result of the number analysis must be forwarded within 10 working days.

The number analysis will always be a snap and therefore discrepancy can occur.

3.1.3. Statistics

The OCH A/S must be able to make statistics, to the operators, for them to be able to make:

1. Financial clearing towards donor of fees in connection with porting of numbers.
2. Financial clearing towards range holder of fees for usage of ported numbers.
3. The OCH A/S shall keep count of the number of attempted portings, the number of successful portings, the number of failed portings including cause of failure. This information shall be used to validate the quality and performance.

This will be detailed further in the Requirement Specification for new functionality to the Operator Clearing House.

3.1.4. Range Holder

The Operator who has been assigned the number from the NTA shall remain the Range Holder regardless of the end-customer's shift between operators.

The Recipient Operator shall therefore pay the annual fee for the number to the Range Holder, the amount of which is fixed in the Number Act.

3.2. Ethical Guidelines for Number Porting

The industry agreement on number portability of 16th of August 2005 with related rules and procedures for number porting form the basis of the implementation of number porting in connection with an end-customer's switch to another telecom operator.

To ensure smooth implementation of number porting for end-customers and telecom operators and to ensure a well-functioning number portability environment, the following is emphasized:

- A donor operator may not prevent a porting flow in progress from being completed by using rejection codes in contravention of the objects clauses defined in Rules & Procedures for Number Portability.
- Legally binding agreements between a telecom operator and an end-customer must be respected.
- It is up to the recipient operator to decide whether, and subject to which conditions, the recipient operator is willing to interrupt a porting flow in progress by using the NP cancel function. The NP cancel function may thus only be used on the initiative of the recipient operator.
- Number porting order data exchanged between telecom operators in connection with implementation of number porting may only be used to perform the agreement to which the data in question is related.

3.3. Responsibilities

3.3.1. Operator Responsibilities

All operators have the following responsibilities:

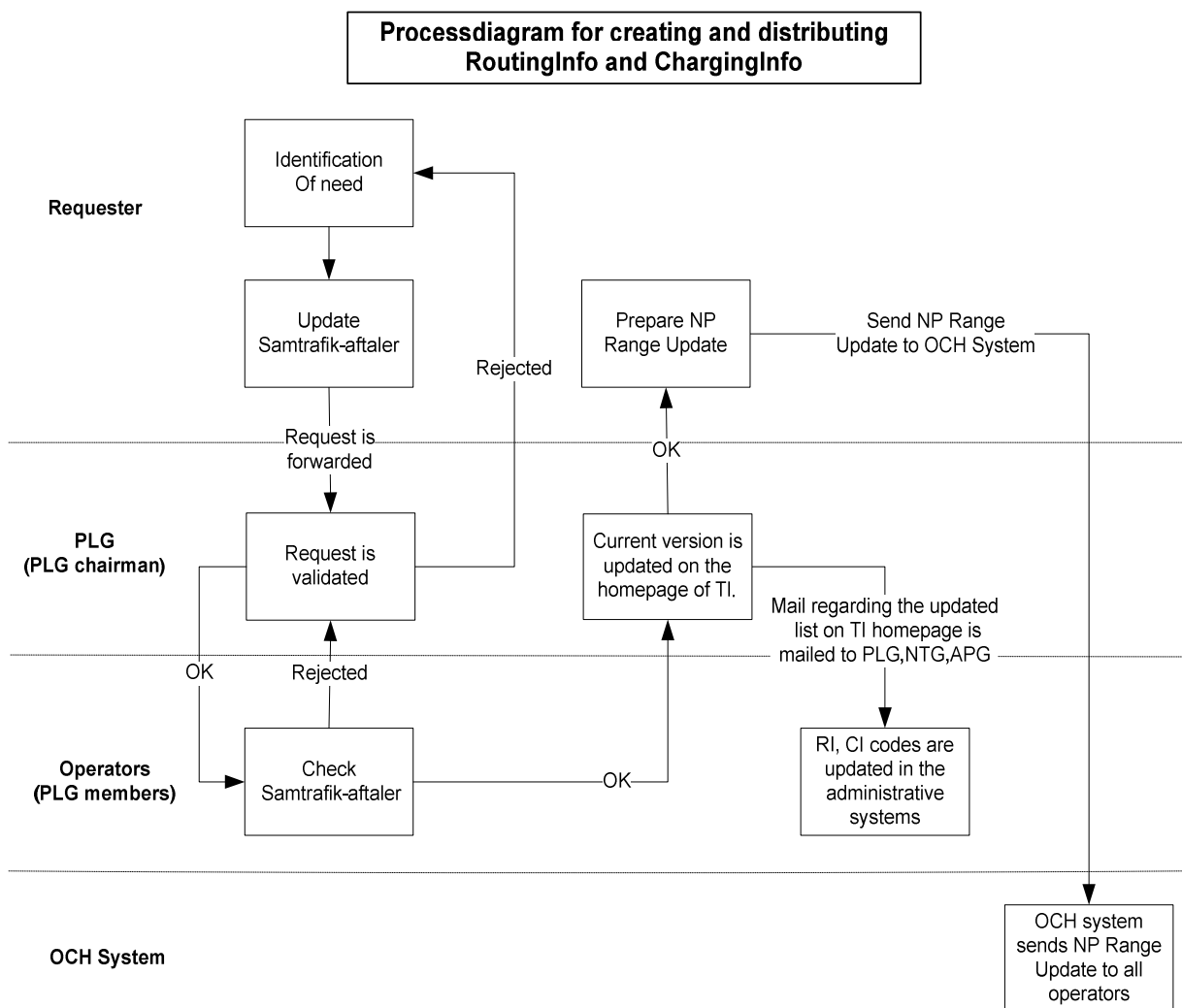
- It is valid for an end-customer to have one pending order on number porting per telephone number. Attempting to submit more than one order per telephone number will cause the subsequent orders to be rejected by the OCH System.
- If number portability orders are delayed at the donor operator or recipient operator, so that the due date will be exceeded, the operator in question must immediately inform the other operator of the nature of delay and the expected execution time. If a delay is caused by a large amount of orders piling up at either operator, this operator must take appropriate action at once, and inform the other operator(s) on the nature of these actions.
- All orders shall be processed in their incoming sequence in relation to execution time.
- If an order or a transaction message contains errors the sending operator shall correct this if possible.
- The time that a Fixed Type I number or Mobile number is disconnected from the network shall not be more than a few minutes.
- All operators must be able to process an <NP Update> message and reply with an <NP Update Complete> to the OCH System in less than 10 minutes.
- The involved operators shall perform the physical porting, patching etc. with a minimum of inconvenience to the end-customer.
 - Receiving operator is fully responsible for error correction on the end-customer if prefix/routing errors should occur in the importing process. All operators are obliged to assist in the error correcting process if they are involved.

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- To inform the other operators about any changes with regard to charging and routing information. This applies to both single number (porting) and for ranges (update of basic information).
- To ensure that a telephone number for which the operator is not range holder, is returned to the range holder when the retention period expires.
- In order to prevent excessive load on the other Operator, e.g. caused by batch jobs, the submitting Operator shall send orders without delay.
- When a telephone number is resold to a Service Operator without a connection to the OCH System, it is the responsibility of the new Service Operator to contact the Network Operator or the Service Operator with connection to the OCH System to update the OCH System with the new Service operator information. Based on the updated OCH information, the authorities can then contact the dedicated point of contact within the new Service Operator.

3.3.1.1. Process description for creation of new Routing and Charging.

The process for reporting and creating the RoutingInfo and ChargingInfo is shown below. Area of responsibility is described thereafter.



The process involves the following 3 instances:

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- Requesting Operator.
The requesting operator must make sure that the RoutingInfo(RI) and ChargingInfo(CI) are in correspondence to an existing Number Range owned by the requesting operator or a new Number Range owned by the requesting operator. See section 1.4 for definitions of RI and CI. The RI and CI can not be the equivalent of a number range which is greater than the said Number Range. If a Operator runs out of numbers and therefore byes more numbers from TeleStyrelsen, then the operator can use the same RI/CI for those new numbers.

The requesting operator updates Samtrafik-aftaler to reflect the future use of the new RI and CI.

Then the requesting operator forwards the request to the PLG chairman containing information regarding the Number Range, NumberType, RI, CI and date for activation. The combination and syntax rules of these informations are described in APG96.

After updating the existing "Samtrafik-aftaler", and upon final approval of PLG, the requesting operator may send the relevant NP Range Update to OCH.

- The chairman of the PLG.
The chairman receives the request from the requesting operator with the specific RI and CI codes and validates the request.

The chairman sends the RI and CI to the members for validation.

Under normal circumstances the operators (PLG-members) must deliver an answer within 1 month. However if no such answer has been given by the operators the RI and CI will be approved by the chairman. Furthermore the chairman has authority to order the fast track validation procedure. In the fast track approval procedure the operators (PLG-members) must deliver an answer within 14 days.

Upon approval the existing list of ranges is updated on the TIs homepage by the chairman. A e-mail about the updated list is then e-mailed to all PLG, NTG and APG members by the chairman.

If the request is rejected by the chairman then the requesting operator is informed of this and the reason for the rejection is explained by the chairman to the requesting operator.

- The OCH operators.
Upon receipt of the validation request from the chairman the operators must check the "Samtrafik-aftaler". The operators must return an answer to the chairman within the time-limit set by the chairman.

Upon receipt of the e-mail with the updated list of RI/CI from the chairman the operators may update the relevant internal administrative systems.

When the "Samtrafik-aftaler" has been updated and the NPRange Update has been received the operators must implement the routing in the network.

3.3.2. Donor Operator Responsibilities

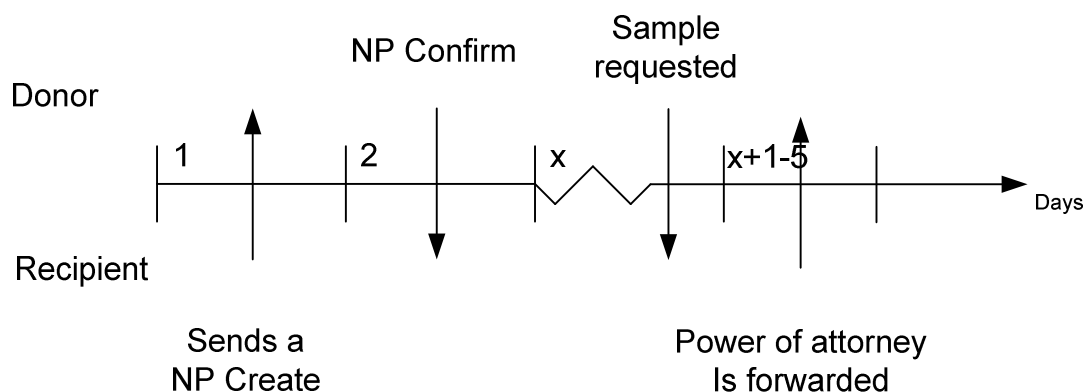
When executing a porting of a number, the donor operator has the following responsibilities:

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- if the donor operator wants relevant documentation for the valid end-customer relationship, this must not delay the overall order processing.
- every operator must inform PLG of the syntax of his Customer-ID and ICC number and where the end-customer can retrieve this information, cf. appendix X. Then PLG will ensure that this information is available at the website of TI.
- when a donor operator receives a number portability order (<NP Create>), he shall respond according to the data flow model before the end of normal office hours the following working day, provided that power of attorney request is on file. If no power of attorney request is on file, the donor operator shall hold the portability order for 10 working days, and in case of time-out reject the order by using <NP Reject>.
- The exchanging of the power of attorney can be substituted by using the ICC field or the Customer-Id field in a NP Create, cf. clause 7.7 in the Standard Number Portability Agreement.

1) If ICC field or Customer-Id field is used the donor operator must respond according to the data flow model before the end of normal office hours the following working day.

The model below shows the flow where the flow is confirmed and afterwards a Power of attorney is requested by the donor.

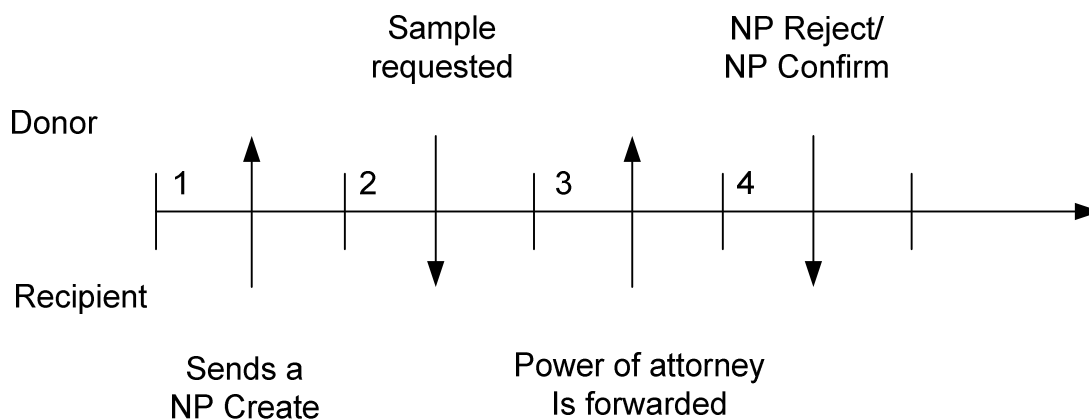


If the Power of attorney is invalid (not received or erroneous) before the NP Completion has been sent, the Recipient must upon request from Donor send a NP Cancel and thereby stop the flow.

If the Power of attorney is invalid and the number has been ported to the Recipient then the number must be ported back (using a NP Create) to the Donor within 24 hours. A new ICC/Customer-Id or Power of attorney is not required and the new Donor cannot use any Retention / Termination period. The request for porting back within 24 hours must be raised max 10 working days after the porting has taken place.

2) If ICC field/Customer ID is used the donor operator must respond according to the data flow model before the end of normal office hours the following working day.

The model below shows the flow where a donor operator requests a Power of attorney before sending a NP Reject or NP Confirmation.



- validation of orders is done at the time of reception of <NP Create> based on the end-customer and current network status. Orders can be subject to a second validation before execution of the order, which can lead to a rejection due to end-customer and network status. In this case the Donor shall contact the Recipient and inform about the changes.
- in case an order contains:
- No "wanted execution date" (i.e. as soon as possible) the donor operator shall inform <NP Confirmation> the recipient operator about the execution date.
- A "wanted execution date" which is set beyond the minimum time, the donor operator shall confirm the order <NP Confirmation>, or inform <NP Confirmation> the recipient operator about an alternative date.
- A "wanted execution date" which is set prior to the minimum time, the donor operator will inform <NP Confirmation> the recipient operator about the earliest possible execution date.
- the donor operator is not allowed to set "confirmed execution date" prior to "wanted execution date".
- it is recommended that the donor operator have an internal procedure to handle SIM card locks and operator locks on the mobile telephone.

3.3.3. Recipient Operator Responsibilities

When executing a porting of a number, the recipient operator has the following responsibilities:

- planning and if required, lead the execution of a fall-back plan.
- when an end-customer wants to port his number, it is the responsibility of the recipient operator to ensure that a valid end-customer relationship exists. When required by the donor operator, the recipient operator must supply relevant documentation for the valid end-customer relationship.
- If the <NP Create> is validated using ICC field or Customer-ID and the donor operator requests Power of attorney of valid end-customer relationship then the recipient donor must supply this information before the end of normal working hours the following working day. The Power of attorney must be sent by returning the request e-mail (described under Random Check Solution) with the Power of attorney attached in electronic form. If the number has been ported to the Recipient and the Power of attorney is invalid (according to the Donor and end-customer judgement) then the Recipient must confirm the Number for porting back with a ConfirmedExecutionDate no later than the next working day (if no RequestedExecutionDate is present).

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- in order to prevent excessive load on the donor operator, e.g. caused by batch jobs, the recipient operator shall send orders without delays.
- that the end-customer has access to the network, and that emergency calls to 112 are enabled at all times.
- to inform the donor operator about the point of connection in the porting order.
- to inform the donor, the OCH System and other operators connected to the OCH System when a porting order has been completed (<NP Completion>).
- to ensure that the porting order is executed on the agreed execution date. The donor operator has the right to disconnect the access to the end-customer after the agreed execution date, if no information has been received.
- is not allowed to complete an <NP Create> prior to the agreed execution date.
- to keep track of the operators that has not sent a <NP Update Complete> within the 10 minutes time limit.

3.3.4. Network Operator Responsibilities

As a fix-line networkoperator the requirements from 'Bekendtgørelse om sikring af offentlige telenet og teletjenester' must be fulfilled and as a minimum it must be secured that:

- Preference must be established in own network on demand from the authority
- Donor operator must inform recipient operator about a numbers preferences when porting.
- Recipient operator must inform authority about the changed network-conditions

3.3.5. OCH Responsibilities

When executing a porting of a number, the OCH System has the following responsibilities:

- The OCH System shall send a <NP Update> based on a <NP Completion> within one minute.
- The OCH A/S shall inform in writing when operators (network and service) are added to or removed from the OCH System to all the existing operators connected to the OCH System.
- The OCH System shall not perform any checks on dates apart from pure syntax checks.
- If the RecipientNetworkOperator is different from the RecipientServiceOperator in the <NP Create> the OCH System shall mark the flow as being in "copy mode". This shall cause the OCH System to send copies of transactions to the RecipientServiceOperator.
- If the Donor Service Operator is different from the Donor Network Operator, the OCH System shall mark the flow as being in "copy mode". This shall cause the OCH System to send copies of transactions to the Donor Network Operator.
- In order to ensure that an NPCreate request is send to the correct OCH direct connected Service Operator, the LUBO field is used. This field is further detailed in the Transaction document.

Before a new operator is connected to the OCH, the OCH must inform the operator about:

- A bilateral agreement for number porting, which can be based on the Standard Number Portability Agreement, must be made with each of the other operators connected to the OCH.
- A list of contact persons at the new operator, which the existing operators must contact regarding number portability issues, must be sent to each operator connected to the OCH.

This must be completed at least 14 days before the operator is actually connected to the OCH.

When a new operator is connected to the OCH, the OCH must supply the following information at least 14 days before connection date to the existing operators using OCH:

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- Operator ID
- Operator Name

If the new operator has numbers in the OCH, then the operator immediately must inform the other operators by sending relevant NP Range Update transactions. The NP Range Update must contain at least the following information:

- Operator ID
- Routing Info
- Charging Info
- SPC
- NumberType

3.4. Rejection Causes

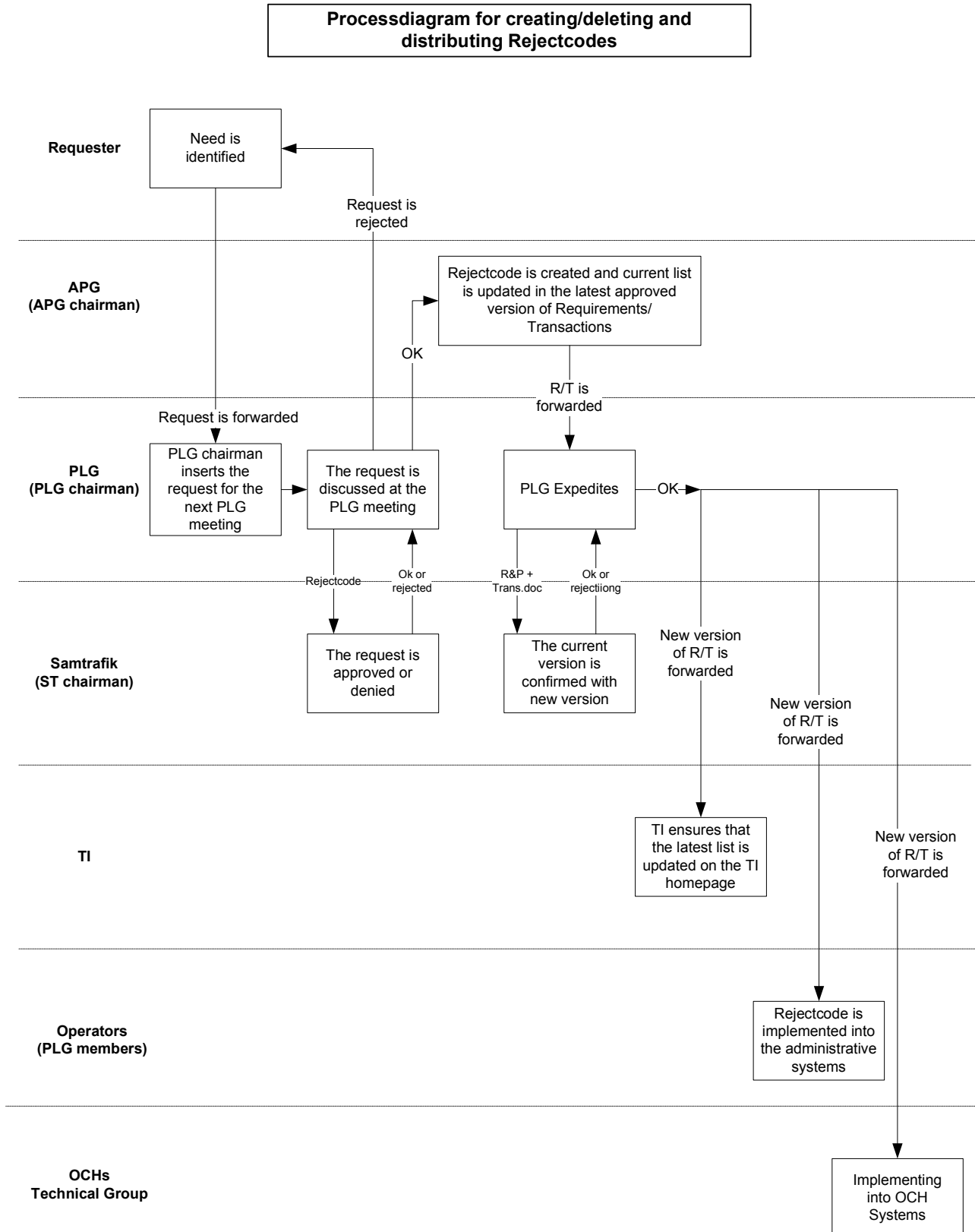
The Donor Operator shall reject a porting order, if the end-customer already has an order pending on this telephone number(s).

The rejection causes are specified in Requirements/Transactions for Number Portability.

3.4.1. Process description for creating and deleting Reject codes on OCH

The process for creating or deleting a reject code for OCH is illustrated below. Thereafter the area of responsibility is described.

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- The requester.
The requester identifies a need for a change of reject code. This need is described in detail with a date for activation. The request is forwarded to the chairman of the PLG.

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- The chairman of the PLG.
Upon receipt of the request the chairman puts it on the agenda for the next PLG meeting.
- "Samtrafik"
A change of reject code must be sent to "Samtrafik" for approval.
- The chairman of the PLG.
If the request is rejected the requester is informed by this by the chairman of PLG.

If the request is approved the chairman forward the information to the chairman of the APG.
- APG
The change of reject code is inserted in the current approved Requirements/Transactions (R/T) documents.
- PLG
PLG forwards the new R/T documents to "Samtrafik".
- "Samtrafik".
"Samtrafik" approved the new R/T documents to the new current version and returns the documents to PLG.
- PLG.
PLG agrees on the date of activation and forward the information to Telekommunikations Industrien and the operators.
- Telekommunikations Industrien (TI).
The change of reject code is publicised in the new current R/T document by making the document available on the TI homepage (Sekretariatet).
- The Operators.
Upon receipt of the new current R/T the operators ensures the updating of the administrative systems with the change of reject code and that they are available for use on the requested date.
- OCH A/S Technical Group.
The chairman of the PLG informs OCH A/S Technical Group about the change of reject code with the purpose of implementation in OCH systems.

4. Service Operation

This section defines the service operation and the Rules & Procedures necessary to support Number Portability.

4.1. General Information

Administrative procedures and administrative interfaces between Operators are defined at business and end-customer level and will be further refined in the Requirement Specification for the Operators Clearing House.

The numbers that can be ported include, without exception, all numbers for which a written agreement or reservation exists. This applies for Number Type II. For Number Type I a written agreement with payment or reservation shall exist or the number shall be in use (e.g. Prepaid). When an end-customer wants to port his telephone number within the retention time frame, the end-customer has to reactivate the telephone number at the donor operator, and then activate the porting.

At completion time of a porting, the Recipient Operator or the Current Operator (geographical porting) must inform all other operators of the telephone number's new/actual information for routing, charging, municipality code and SPC. This obligation also applies for telephone numbers with no direct geographic relation i.e. Mobile, 70/80/90 numbers and SONOFONS 721xxxxx numbers, where the municipality code is set to an agreed default value.

When a number related to a 70/80/90 number has to be ported, this is done using a separate Type I (or if DDI, Type II) transaction, and the relation stays active after porting. When porting the 70/80/90 number a Type I transaction shall be used. Subsequent porting shall be handled like a new Number Portability order. The current Operator now becomes the Donor Operator and the new Operator becomes the Recipient Operator.

If an end-customer wants to port his telephone number back to the previous Operator, the order shall be handled like a create porting order. If the Porting Back is to the Operator who has been assigned the number (Range Holder), the porting procedure still has to be followed. However, the end result is as if porting had never happened. When this situation occurs, the recipient operator flags it in the <NP Completion> transaction. This does not apply if a geographic porting is still active.

If, for any reason, the end-customer wants to end his relationship with his current Operator, the current Operator handles this as a termination in his administrative and technical systems.

At the expiration of the retention time the telephone number must be returned to the Range Holder.

4.1.1. Porting of number series

A number series means an unbroken, continuous range of telephone numbers. Most often, number series are in use by end-customers with a private branch exchange (PBX). Usually the numbers are used for Direct Dial In, the numbers being routed by the PBX to the appropriate extension numbers. This allows every extension number to be dialled using an eight-digit telephone number, the so-called DDI number.

Direct Dial In is available on ISDN2, ISDN30 or analogue lines. Several number series may be available to an end-customer.

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The operator allocates a number series from assigned blocks of 10, 100, 1.000 or 10.000 numbers. If the same end-customer has more than one number series the operator may allocate the series from the same block or from more than one block.

When an end-customer that uses one or more number series wishes to change to another operator, the donor operator must relinquish the end-customer's number series to the recipient operator.

Only whole number series may be ported. The end-customer can not port parts of a number series because this would break up the continuous range. Where more than one number series is allocated to the end-customer, referring to the same main telephone number, all the series must be ported within one transaction. This applies whether the number series in question are active or reserved or a combination of these.

It is common for e.g. a block of 1.000 numbers to be broken up and assigned to several different end-customers unless one end-customer has reserved and paid for the greater part of the number series.

Any amendment of the existing procedures therefore involves receipt by the recipient operator, prior to dispatching the <NP Create>, of written verification of the number series that have been allocated to the end-customer by the donor operator (active, reserved and inactive number series). On the basis of a power of attorney from the end-customer the recipient operator contacts the donor operator. (This service is currently already being provided to e.g. PBX suppliers).

The donor operator returns the list of the end-customer's number series, which subsequently form part of the <NP Create>. This means that the donor operator helps safeguard the quality of the <NP Create>.

4.1.2. Distinctive ringing

When Distinctive Ringing is assigned to a number, it is possible to port all numbers using the <NP Create>. The main subscription number shall be entered in the Main Telephone Number field, and attached supplementary numbers entered into the Series number fields.

4.1.3. ISDN2

When porting numbers in an ISDN2 subscription, it is possible to port all numbers using the <NP Create>. The main subscription number shall be entered in the Main Telephone Number field, and attached supplementary numbers (MSN) entered into the Series number fields.

For Direct Dial In (Number Type II) the ordering and processing shall be related to the main telephone number used by the end-customer and shall affect all numbers in the Direct Dial In number series. The main subscription number shall be entered in the Main Telephone Number field, and attached supplementary numbers (MSN) entered into the Series number fields.

4.1.4. Two or more numbers on one SIM card ported using one < NP Create>

Generally, number series does not exist in the mobile world in terms one main number with a consecutive range of sub numbers.

However, there exists the case where 2 or more numbers are associated with one SIM card. When porting this type, the numbers can be ported using two or more <NP Create>, but can also be ported using one <NP Create>. If a mobile number series used for voice, data and/or

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fax on one SIM card are ported in one <NP Create>, then it is recommended that the voice number is used as the main number.

If two or more mobile numbers are placed on two or more SIM cards, then one <NP Create> can be used for each SIM card.

If one or more numbers on the SIM card is not referenced in the <NP Create> then the Donor Operator must terminate the subscription to these numbers.

4.1.5. Mobile Number Series

If the Recipient Operator wants to port multiple mobile numbers placed on multiple SIM cards, this is possible using a <NP Create> in a Type II configuration.

It is optional for an operator to implement the Type II for Mobile Number Series.

The Donor Operator will as default confirm the porting date as the latest possible of all dates taking the retention period into consideration. E.g. if one mobile number has 24.12.2001 as expiration of the retention period, and another mobile number has 15.01.2002 as the expiration of the retention period, then the earliest porting date is 16.01.2002.

4.1.6. Usage of Type II Number Series (NP Create, NP Change)

The following restrictions apply for these types of porting:

- All the numbers in the transaction must have the same Donor Service Operator
- All the numbers in the transaction must have the same Donor Network Operator
- All the numbers in the transaction must be portable
- All the numbers in the transaction must belong to the same end-customer
- All the numbers in the transaction must be of the same type (i.e. GSM or FIXED)
- All the numbers in the transaction must be ported at the same time.
- All numbers in one Series field must be in an unbroken ascending sequence

If any of the above restrictions is not fulfilled, then the porting is rejected either by the OCH System or by the Donor Operator.

In case of special circumstances an Operator may apply for a dispensation at OCH A/S from the above rules. Examples of this would be: Taking over another operator and moving the numbers to his own net, new municipality codes, etc.

If the Operator gets a dispensation then the Operator must inform all other operators connected to OCH of the content of the dispensation.

4.2. Operator Information

This section describes how operator information is added, changed or removed from the OCH System. Operator information consists of:

- Operator ID – this information is updated using letters and faxes with a receipt. In the case of creating, the Operator ID cannot be accepted before the individual operators have responded.
- Range Information – this information is updated using <NP Range Update> through the OCH System, when the operator is known by the OCH System, provided that the operator has numbers in the network.

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When an operator (Network or Service) is added to the list of known operators it is the responsibility of the Operator Clearing House (OCH A/S) to inform the existing operators about the addition of the new operator in writing.

It is in the above assumed that physical connection to the OCH System exists, that software is loaded and operational etc. Operator Number (Prefix code) is issued by the NTA for Network Operators, or is issued by the OCH A/S for Service Providers.

If the service provider does not have a connection to the OCH System, then it is the task of the Network Operator or the Service Operator with OCH System connection that executes the resell to handle all transactions to and from the OCH System on behalf of the service provider.

4.3. Timing Information

The following applies when porting from Donor Network and applies to the execution date. Not included is any termination period, which varies from operator to operator. Both the Donor Network Operator and the Donor Service Operator shall abide by these rules.

If the termination period is longer than the number of working days stated below, then the wanted date is the termination period. If the termination period is shorter or equal to the number of working days stated below, then the maximum time is the number of working days.

Type I	Wanted date as soon as possible	Wanted date is stated
Customer ID is known or Pre Paid SIM card.	Min. 3 but max. 5 working days. Unless the termination period states otherwise.	Min. 3 working days, but shall be confirmed to 3-5 working days. If wanted date is > 5 working days, the wanted date shall be adhered to. Unless the termination period states otherwise
Customer ID is not known	Min. 8 but max. 10 working days. Unless the termination period states otherwise	Min. 8 working days, but shall be confirmed to 8-10 working days. If wanted date is > 10 working days, the wanted date shall be adhered to. Unless the termination period states otherwise.

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Type II (incl. hunt group timing)	Wanted date as soon as possible	Wanted date is stated
Customer ID is known	Min. 8 but max. 10 working days. Unless the termination period states otherwise.	Min. 8 working days, but shall be confirmed to 8-10 working days. If wanted date is > 10 working days, the wanted date shall be adhered to. Unless the termination period states otherwise
Customer ID is not known	Min. 15 but max. 20 working days. Unless the termination period states otherwise	Min. 15 working days, but shall be confirmed to 15-20 working days. If wanted date is > 20 working days, the wanted date shall be adhered to. Unless the termination period states otherwise

If the Donor Operator cannot fulfil the requested execution date, he shall send a message <NP Confirmation> to the Recipient Operator with an earliest possible confirmed execution date. Unless otherwise agreed between Donor and Recipient the confirmed execution date shall be a working day. Until the Recipient Operator responds, this date is reserved if not already passed. The Recipient Operator may cancel the alternative execution date if the end-customer prefers. Otherwise the alternative date is accepted. The Recipient Operator may request an earlier date than the confirmed date given by the Donor Operator in the NP Confirmation. This date cannot be prior to the originally requested date by the Recipient Operator. The Donor Operator has to make a multiple NP Confirmation based on the mutually agreed execution date.

If the requested execution date is beyond 6 months from the date where the porting is ordered, the porting shall be rejected.

The minimum time can be ignored if Donor Operator (both Network and Service) and Recipient Operator (both Network and Service) agree.

If the Donor operator, Recipient Operator and end-customer agrees that the porting was a mistake then the Donor and Recipient Operators must be able to recover the situation within a maximum of 24 hours.

4.4. Creating Number Portability – Process Description

The process of porting an end-customer telephone number from a Donor Operator to a Recipient Operator is done using the following Process flow:

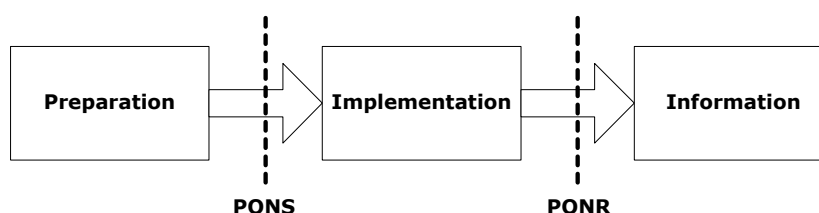


Figure 2 - Process Flow

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Before PONS (Point of No Stop) is passed the entire porting flow will be terminated if an error is detected in any of the transactions.

When PONS (Point of No Stop) is passed a porting cannot be stopped when the Donor, Recipient Operator or OCH System sends an erroneous message. The cause of the error has to be found, corrected and the flow resumed. The PONS is passed when the OCH System receives the <NP Confirmation> from the Donor Operator, but before the OCH System does validation. This implies that if the OCH System finds errors the Donor has to correct the error and resend the <NP Confirmation>.

Before PONR (Point of No Return) is passed the porting flow can be cancelled by the Recipient Operator.

When PONR (Point of No Return) is passed the porting flow cannot be cancelled, but has to be completed. The PONR is passed when the OCH System receives the <NP Completion> from the Recipient Operator, but before the OCH System does validation.

4.4.1. Operator Porting

1. The end-customer contacts the Recipient Operator.
2. Power of attorney about Number Porting is made between end-customer and Recipient Operator.
3. The Recipient Operator terminates the end-customers subscription agreement with Donor Operator in the intend of importing the phone number to the Recipient Operator.
4. The Recipient Operator writes an <NP Create> and sends it to the Donor Operator via the OCH System. The order must contain a Point of Connection. The OCH System verifies the order and rejects invalid orders. An invalid order is an order with syntax errors, semantic errors, pending violation or date¹ violation. For all valid orders the OCH System returns an <NP OCH Order Number Response> message.
5. The Donor Operator matches the <NP Create> with the termination of the end-customer's subscription agreement. During a period of up to 10 working days a match is attempted between the <NP Create> and the power of attorney order with short intervals (< 1 day). If no match is possible within the timeframe, the <NP Create> is rejected using a <NP Reject>. This does not apply if ICC/Customer-ID solution is bilaterally agreed on, cf. clause 7.7 in the Standard Number Portability Agreement.
6. The Donor Operator validates the order and returns either an <NP Reject> message or an <NP Confirmation> to the Recipient Operator.
An alternative order execution date shall be stated on the <NP Confirmation> message if the Donor Operator cannot comply with the requested porting date.
 - In case the Recipient Operator receives a <NP Reject> or <NP Error> message, a new <NP Create> may be issued and sent to the Donor Operator.
7. The Recipient Operator starts working on implementing the access, that being through copper, fibre or by issuing a SIM card.

¹ The OCH System can only validate the obvious date errors (e.g RequestedExecutionDate = yesterday).

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8. On the agreed date, the Recipient Operator activates the end-customer in the administrative systems, and opens up the access connection (copper, fibre or SIM card). The recipient operator updates his databases (STP/IN) and the number database.
9. An <NP Completion> message is sent to the OCH System, thereby informing the other operators that the end-customer is activated.
 - The OCH System updates its databases and sends the <NP Update> message to the other Operators including the Donor Operator.
10. Donor Operator terminates the end-customer relation in the administrative systems, ensures that the access connection is taken out of service, and marks the number as being ported in the switching systems (STP/IN) and the number database and send a <NP Update Complete> to the OCH System.
11. Other operators update the switching information in their systems (STP/IN) and the number database and send a <NP Update Complete> to the OCH System.

The flow described above covers all variants of Operator Porting (i.e. 1st time porting, subsequent porting, etc.) for Fixed-Fixed (Types I and II), Mobile-Fixed (Type I), Fixed-Mobile (Types I and II) and Mobile-Mobile (Type I and II).

4.4.2. Service Provider as Donor.

This section applies if the Service Provider is connected directly to the OCH System.

The Service Provider shall respond to the <NP Create> with a <NP Confirmation>. The OCH System shall send a copy of the <NP Confirmation> to the Donor Network Operator for information.

If the porting is cancelled, the OCH System shall send a copy of the <NP Cancel> to the Donor Network Operator for information.

The Donor Network Operator is also informed when the <NP Update> is sent from the OCH System to all operators. The actual termination of the service is done when the <NP Update> is received.

4.4.3. Service Provider as Recipient.

This section applies if the Service Provider is connected directly to the OCH System.

The end-customer contacts the Service Provider. The Service Provider sends a <NP Porting Request> to the selected Network Operator through the Operator Clearing House System, requesting that the Network Operator controls the operator porting. The Network Operator will establish the access for fixed lines, but one of both can issue the SIM card, depending on bilateral agreement between the Service Operator and the Network Operator.

When the Network Operator has accepted the request, he will issue a <NP Porting Response> to the Service Operator. The Network Operator will then initiate a normal operator porting flow, where the Service Operator receives copies of the <NP Create>, <NP Confirmation>, and <NP Update Complete>.

The above flow is also used as a preamble when the Service Operator wants Geographic Porting and Function Porting performed by the Network Operator.

4.4.4. Service Provider on the Donor side without link to OCH System

The Service Provider has to use the Network Operator for the communication with the other operators.

The Operator that last updated the Service Operator field receives the NP Create Order and before he sends the <NP Confirmation> transaction, he shall obtain acceptance from the Service Provider. This operator id is inserted into the field Last Uppdated By Operator, LUBO, in OCH database.

When the Operator that last updated the Service Operator field – upon reception of a <NP Update> – has updated his databases, he must also inform the Donor Service Operator.

4.4.5. Service Provider on the Recipient side without link to OCH System

The Service Provider has to use the Network Operator for the communication with the other operators.

The end-customer contacts the Service Provider. The Service Provider contacts the Recipient Network Operator, requesting him to be Network operator for the Service Provider's coming end-customer. If the Network Operator agrees, a normal porting flow starts with the Network Operator as Recipient Network Operator. This describes the situation where the resell takes place directly between the Network Operator and the Service Operator without OCH link. In these cases, the Network Operator issues a NP Create, which states that Recipient Service Operator is equal to the Service Provider without OCH link.

E.g. when the Service Provider without OCH link is Hard2Tel, and the Network Operator is Sonofon then the result will be:

- Service Operator: Hard2Tel
- Network Operator: Sonofon
- LUBO: Sonofon

In cases where the resell goes through a Service Operator with OCH link, the contact to the Recipient Network Operator goes through him. In order to ensure the correct content of the LUBO and the ServiceOperator field the Service Operator with OCH link must send a NP Change after the NP Create flow is closed.

In these cases there are two steps required to perform the porting.

In the first step the Network Operator issues a NP Create transaction, which states that Recipient Service Operator is equal to the Service Provider with OCH link.

In the second step the Service Operator with OCH link issues a NP Change transaction, which states that Recipient Service Operator is equal to the Service Operator without OCH link.

E.g. an end-customer wants to join Cirque and this end-customer has a telephone number which is currently located at Sonofon as network operator. Then Cirque who is a Service Operator without OCH link contacts his Service Operator with OCH link: Tele2. Tele2 chooses to ask TDC to import the number into the TDC network and resell the number to Tele2.

This is the first step.

The second step is the NP Change issued by Tele2 where Tele2 inserts Cirque as Service Operator.

Result after 1'st step (NPCreate flow):

- Service Operator: Tele2
- Network Operator: TDC
- LUBO: Tele2

Result after 2'nd step (NPChange flow):

- Service Operator: Cirque
- Network Operator: TDC
- LUBO: Tele2

4.4.6. Activities when porting Pre Paid Numbers

When porting a number that belongs to a Pre Paid SIM card the following activities shall be done (please refer to the scheme in 4.4.1):

1, 2, 4, 6, 7, 8, 9, 10, 11

4.4.7. Activities when activating GSM numbers

When activating or changing the charging information for a range of GSM numbers the following steps apply:

- Prior to the Range Update, range holder must inform all operators according to the interconnect agreements.
- Range holder must insert active GSM numbers in the range part of the OCH Number Database with correct routing information and charging information.

4.4.8. Activities when activating 70 and 80 numbers

When activating or changing the charging information for a range of 70 and 80 numbers the following steps apply:

- Prior to the Range Update, range holder must inform all operators according to the interconnect agreements.
- Range holder must insert active 70 and 80 numbers in the range part of the OCH Number Database with correct routing information and charging information.

4.4.9. Activities when activating and porting 90 numbers

When activating or changing the charging information for a range of 90 numbers the following steps apply:

- Prior to the Range Update, range holder must inform all operators according to the interconnect agreements.
- Range holder must insert active 90 numbers in the range part of the OCH Number Database with correct routing information and charging information.

When porting 90 numbers the following steps apply:

- Prior to the execution of an operator porting (change of network operator), recipient network operator must inform all operators according to interconnect agreements.
- Prior to the execution of a function porting (change of charging information), the current network operator must inform all operators according to interconnect agreements.
- The operator porting or function porting is executed.

4.5. Operator Porting – Flows

When the end-customer moves one or more Telephone Numbers from one operator to another, but does not change physical address (relevant for fixed) an Operator Porting takes place.

Assumptions for the flows are:

- The end-customer contacts the recipient operator.
- Recipient Operator terminates the existing contract on behalf of the end-customer
- The Recipient Operator needs to prepare the access for the end-customer that should be used after the porting. This is done by issuing a new SIM card or by initiating the access by a fixed line e.g. fibre network access.

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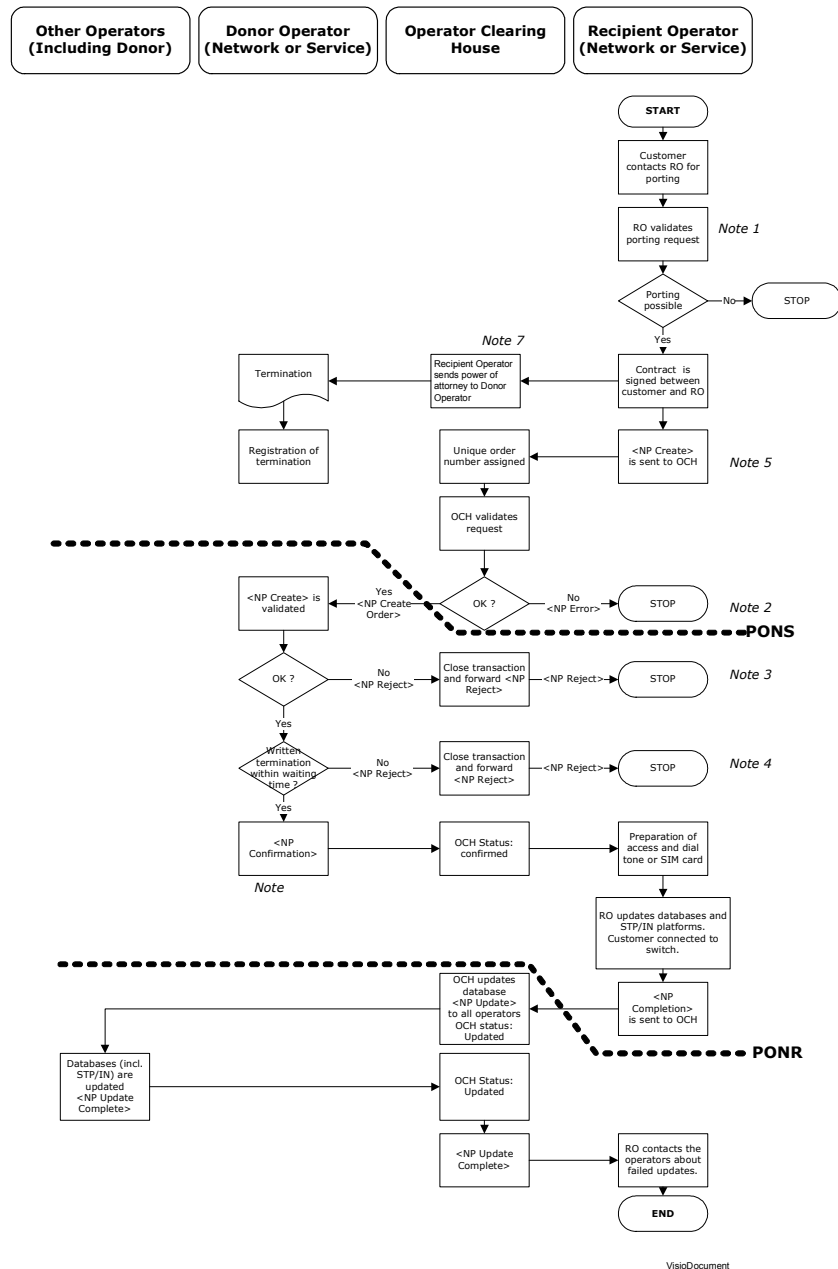


Figure 3 - Operator Porting

- Note 1* If the Recipient Operator is a Service Provider, then it is advisable that the Service Provider obtains approval for establishing the access from the Network Operator before the contract is signed with the end-customer. See the request flow specified on page 47, if using the OCH System to obtain the approval.
- Note 2* The Recipient Operator may need to contact the end-customer for further information before starting the transaction flow from the beginning.
- Note 3* The Recipient Operator may need to contact the end-customer for further information before starting the transaction flow from the beginning.
- Note 4* The Donor Operator has waited for the power of attorney for 10 working days, but the power of attorney has not arrived. For GSM this only applies if the Donor Operator is not using ICC field validation.
- Note 5* It is assumed that the <NP Create> order is sent as soon as possible after the end-customer has signed the contract.

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- Note 6 *It is possible for the Donor Operator to send multiple <NP Confirmation> in order to change the execution date. This may only be done after agreement with the Recipient Operator.*
- Note 7 *The power of attorney is faxed or e-mailed from the Recipient operator to the Donor operator using a power of attorney from the end-customer. Note: For GSM the Power of attorney may be replaced by using ICC field validation instead.*

4.6. Termination – Flows

When the end-customer terminates his subscription agreement with the current operator, who is not the range holder, the number has to be returned to the range holder after the retention period has expired.

When the retention period has expired, the current operator updates databases and sends a <NP Return> message to the OCH System. The OCH System updates databases and converts the message into a <NP Update> message that is sent to all operators. All Operators return an <NP Update Complete> message to the OCH System upon successful update of their databases. The OCH System sends the <NP Update Complete> through to the recipient operator.

4.7. Geographic Porting – Flows

When the end-customer moves from one location to another within the current Operator but outside the geographic area covered by the local switch and keeps the same telephone number, geographic porting arises.

When the geographic porting has been completed, the current operator updates databases and sends an <NP Change> message to the OCH System. The OCH System updates databases and sends an <NP Update> message to all other Operators. All Operators return an <NP Update Complete> message to the OCH System upon successful update of their databases. The OCH System sends the <NP Update Complete> through to the recipient operator.

A telephone number ported from or to another Operator may be subject to later geographic porting.

Following variations are handled as Geographic Porting:

- Subsequent Geographic Porting
- Geographic Porting Back

4.8. Function Porting – Flows

When the following event occurs with a telephone number inside the current operator's network:

- Change the routing/charging information

The function porting is used.

The routing/charging information is global for the telephone number (or series of telephone numbers). This means that it is not possible to have two sets of charging information defined for the same telephone number, where one set of charging information is for one group of operators, and the other set is for all other operators.

When the current operator has done the required changes and updated the databases, a <NP Change> message is sent to the OCH System. The OCH System will update the database and will distribute the information to the other operators using <NP Update> messages. All Operators return an <NP Update Complete> message to the OCH System upon successful

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update of their databases. The OCH System sends the <NP Update Complete> through to the recipient operator.

4.9. Range Updates – Flows

The range update is used to inform about updated information in connection with a number range, excluding any ported numbers that may exist in that range. Only the range holder can update range information.

When the range holder has done the required changes to the range in question and updated the databases, a <NP Range Update> is sent to the OCH System. The OCH System will update the database and will distribute the information to the other operators using <NP Range Update> messages. All Operators return an <NP Update Complete> message to the OCH System upon successful update of their databases. The OCH System sends the <NP Update Complete> through to the recipient operator.

4.10. Fault Procedures

The fault procedures address the fault situation(s) that might occur during the administrative and physical Number Portability transactions. Besides those listed here, the Requirements Specification and other instructions for the OCH A/S may list fault cases and possible solutions.

If faults occur in the switching systems, the fault procedures in the Technical Rules & Procedures apply. However, faults related to the OCH System and other administrative procedures are listed in bullets 4.10.1 to 4.10.5.

The operators can agree upon timeframes, where all execution of Number Portability is suspended.

4.10.1. Day-to-day Fault Procedures

The day-to-day fault procedures address the fault situation(s) that might occur after all administrative and physical Number Portability transactions, i.e. the porting has been completed and both the OCH System database and all Operators' databases have been updated with correct information. Besides those listed here the Requirements Specification and other instructions for the OCH A/S may list fault cases and possible solutions.

- If one or more Operators experience mismatch in own database, a possible solution is to obtain the OCH System data and compare it with own end-customer care system.
- In case of data mismatch, the information stored in the OCH System database shall be considered the correct data if the Operators do not agree otherwise in the relevant situation.

Each Operator shall assign a point of contact staffed with qualified personnel ready for mutual troubleshooting. These points of contact shall be specified in the Interconnect Agreement. The OCH A/S shall be involved in locating and correcting faults.

4.10.2. Back-up Procedures

Back-up procedures will be included in the OCH System, and no back-up procedures that bypass the OCH System will be implemented.

4.10.3. Fall Back Procedure

As a fallback for a failed operator porting (detected within 24 hours after the recipient has sent <NP Completion>), an operator porting back to Donor Operator will be performed, where the Donor Operator will disable timing checks.

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In case of failure in Recipient Operators switching systems or the physical connection, the Recipient Operator on behalf of the end-customer can agree with Donor Operator to initiate a rollback of the porting. Depending on status of the porting, one or two scenarios can be used:

Porting-status: Porting Completed

Upon request from Recipient Operator, the Donor Operator will now initiate a <NP Create> with immediate execution date. The Donor Operator (who was recipient previously) will not validate date, but confirm. The Recipient Operator (who was Donor Operator previously) receives confirmation and can now send <NP Completion> to the OCH System when ready. This generates <NP Update> to all other operators.

Porting-status: Porting Active

The Recipient Operator contacts the OCH A/S and asks to close the porting order that is still pending due to outstanding <NP Update Complete>. Upon request from Recipient Operator, the Donor Operator will now initiate a <NP Create> with immediate execution date. The Donor Operator (who was Recipient Operator previously) will not validate date, but confirm. The recipient (who was Donor Operator previously) receives confirmation and can now send <NP Completion> to the OCH System when ready. This generates <NP Update> to all other operators.

4.10.4. Forced closing of flows before PONR

The normal procedure is that the Donor Operator sends a NP Reject or the Recipient Operator sends an NP Cancel.

If this is not possible, a porting flow can be forced closed by contacting the OCH A/S helpdesk. It is only to be done after mutual agreement between Donor Operator, Recipient Operator and possible a cc-operator (recipient of cc-transactions).

4.10.5. Forced closing of flows after PONR

Flows which remains open after Point Of No Return for a long period of time often causes problems because the numbers involved can not be included in new flows as numbers only can be active in one flow at a time.

Therefore all flows will automatically be forced closed by OCH after a configurable amount of time dependent on the type of flow.

I.e. open NP Range Updates will be forced closed after a configurable amount of time, and operator porting flows will be forced closed after another configurable amount of time.

5. Transactions

This section describes the transaction types and their usage.

For a detailed list of fields in each transaction, please see the document "Transactions for Number Portability" (APG96).

Please note that there is no mechanism implemented to change an order once it has been created. The Recipient Operator must cancel the existing order and start a new order sequence with the revised information.

5.1. Transaction Types

5.1.1. NP Create

Abbreviation: NP Create

This transaction type is used to initiate an Operator Porting for a Type I or Type II telephone number.

The NP Create can also be used to implement a Function Porting i.e. where the Operator has multiple end-customer Care Systems.

5.1.2. NP OCH Order Number Response

Abbreviation: NP OCH Resp

This transaction type is used by the Operator Clearing House to return the unique order number assigned by the OCH System.

5.1.3. NP Confirmation

Abbreviation: NP Conf

This transaction type is used by the Donor Operator to confirm the reception of the <NP Create>, and confirms the porting dates.

5.1.4. NP Error

Abbreviation: NP Error

This transaction type is used to inform about a detected error in the transaction. Only the OCH System can send this transaction type.

5.1.5. NP Cancel

Abbreviation: NP Cancel

This transaction type is used by the Recipient Operator to cancel an existing porting order.

5.1.6. NP Completion

Abbreviation: NP Compl

This transaction type is used by the Recipient Operator to indicate that the access connection has been established and that the database at the Recipient Operator has been updated.

5.1.7. NP Update

Abbreviation: NP Update

This transaction type is used by the Operator Clearing House System to indicate that changes are required in the operator's databases for a telephone number Type I or Type II.

5.1.8. NP Update Complete

Abbreviation: NP Upd Compl

This transaction type is used by the Operator to indicate that the databases and systems have been updated in accordance with the information in the preceding <NP Update>.

5.1.9. NP Return

Abbreviation: NP Return

The current service operator uses this transaction type only when imported numbers becomes vacant after any retention period. The numbers are then returned to the network operator as specified in the range part of the OCH Number Database.

5.1.10. NP Change

Abbreviation: NP Change

This transaction type is used by an Operator to indicate that information about a telephone number Type I or Type II has been changed, including Geographic Porting.

The NP Change transaction type is also used by a Service Provider to facilitate a resell of one or more numbers from another operator.

5.1.11. NP Range Update

Abbreviation: NP Range Upd

This transaction type is used to indicate that information about a range of telephone numbers has been changed.

5.1.12. NP Porting Request

Abbreviation: NP Port Req

This transaction type is used by a Service Provider to request the Network Operator to handle the porting.

5.1.13. NP Porting Response

Abbreviation: NP Port Resp

This transaction type is used by the Network Operator to confirm that the Network Operator has taken responsibility of the requested porting.

5.1.14. NP Reject

Abbreviation: NP Reject

This transaction type is used by the Donor Operator to reject an Operator Porting due to the Rejection causes as defined in section 3.4. Rejection Causes.

5.2. Transaction Usage

5.2.1. Operator Porting – Recipient Operator is Network Operator

Refer to section 4.4.1. Operator Porting for textual information.

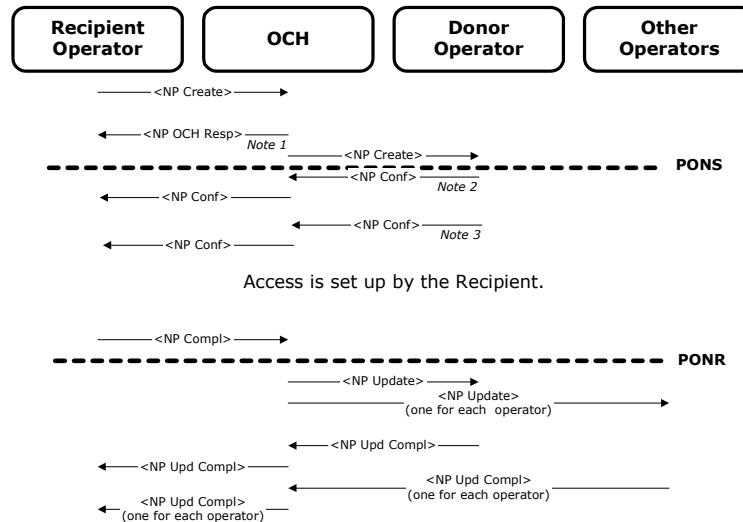


Figure 4 - Operator Porting

- Note 1: If the OCH System detects any errors in the <NP Create> transaction, the OCH System will return a <NP Error> transaction and will terminate the porting.*
- Note 2: If the Donor Operator detects any rejection causes in the <NP Create> transaction, the Donor Operator will return a <NP Reject> transaction, causing the OCH System to terminate the porting after having forwarded the <NP Reject> to the Recipient Operator.*
- Note 3: If the Donor Operator, in agreement with the Recipient Operator wants to change ConfirmedExecutionDate the <NP Confirmation> is sent again.*

The flow shown above covers all variants of Operator Porting (i.e. 1st time porting, subsequent porting, etc.) for Fixed-Fixed (Types I and II), Mobile-Fixed (Type I), Fixed-Mobile (Types I and II) and Mobile-Mobile (Type I).

5.2.2. Operator Porting with Cancel

This flow describes an Operator Porting where the Recipient Operator cancels the flow.

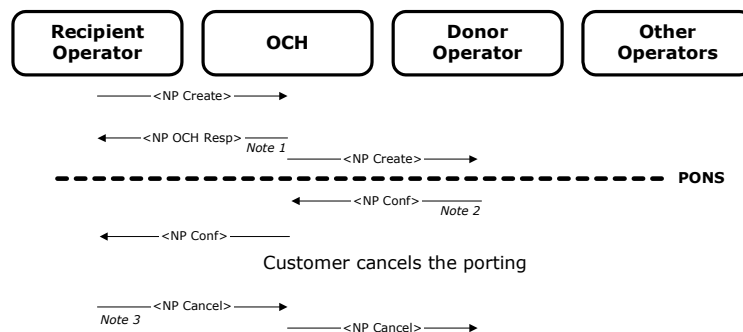


Figure 5 - Operator Porting with Cancel

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- Note 1: If the OCH System detects any errors in the <NP Create> transaction, the OCH System will return a <NP Error> transaction and will terminate the porting.*
- Note 2: If the Donor Operator detects any rejection causes in the <NP Create> transaction, the Donor Operator will return a <NP Reject> transaction, causing the OCH System to terminate the porting after having forwarded the <NP Reject> to the Recipient Operator.*
- Note 3: < NP Cancel> takes effect after any number of < NP Confirmation>.*

5.2.3. Operator Porting – Service Provider as Recipient Operator

Before starting an operator porting where the end-customer relationship is with the Service Provider, it is imperative that the Network Operator can and will supply the access connection to the end-customer.

One way to handle this situation, is that the service provider sends a <NP Porting Request> to the selected Network Operator, which after validating the contents of the <NP Porting Request>, takes over the remaining part of the operator porting.

The Service Provider cannot cancel the first part of the flow. The Network Operator can stop the first part by sending a <NP Reject>.

If the Service Provider wants to cancel the second part of the flow he shall contact the Network Operator and request that the Network Operator issues a <NP Cancel>.

It is recommended that a Service Provider use this flow for both Fixed and Mobile telephone numbers, to ensure that the Network Operator is correctly informed.

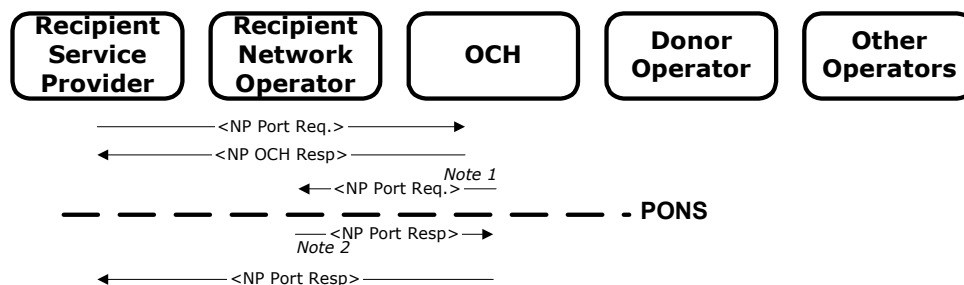


Figure 6 - Porting Request flow

- Note 1: If the OCH System detects any errors in the <NP Port Req> transaction, the OCH System will return a <NP Error> transaction and will terminate the porting request.*
- Note 2: If the Recipient Network Operator is not able to comply with the <NP Port Req> transaction, the Network Operator will return a <NP Reject> transaction, causing the OCH System to forward the <NP Reject> to the Service Operator and the Network Operator will terminate the porting request.*

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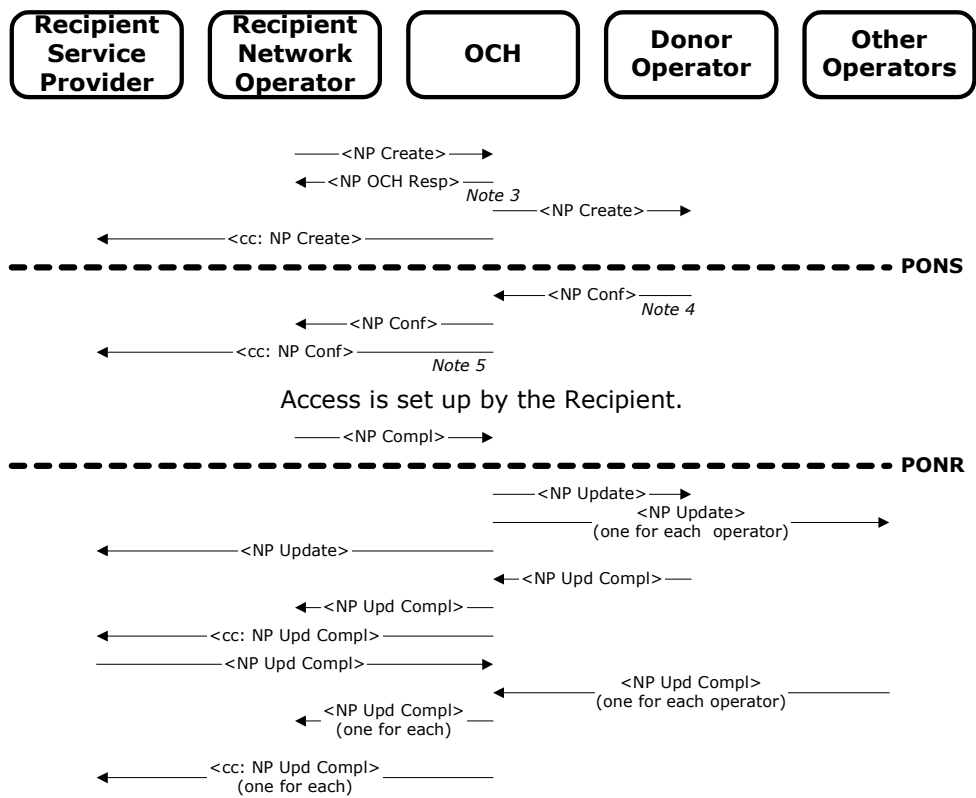


Figure 7 - Operator Porting, Service Provider

- Note 3: If the OCH System detects any errors in the <NP Create> transaction, the OCH System will return a <NP Error> transaction and will terminate the porting otherwise the OCH System will send a copy of the <NP Create> to the Service Provider.*
- Note 4: If the Donor Operator detects a cause for rejection based on the information in the <NP Create> transaction, the Donor Operator will return a <NP Reject> transaction, causing the OCH System to terminate the porting after the <NP Reject> has been forwarded to the Recipient Network Operator with a copy to the Recipient Service Operator.*
- Note 5: The Service Provider is informed by the OCH System using a copy of the <NP Confirmation> message from the Donor Operator.*

5.2.4. Operator Porting – Service Provider as Donor Operator

The Donor Service Provider shall respond to the <NP Create> with a <NP Confirmation>. The OCH System shall send a copy of the <NP Confirmation> to the Donor Network Operator for information.

If the porting is cancelled, the OCH System shall send a copy of the <NP Cancel> to the Donor Network Operator for information.

The Donor Network Operator is also informed when the <NP Update> is sent from the OCH System to all operators. The actual termination of the service is done when the <NP Update> is received.

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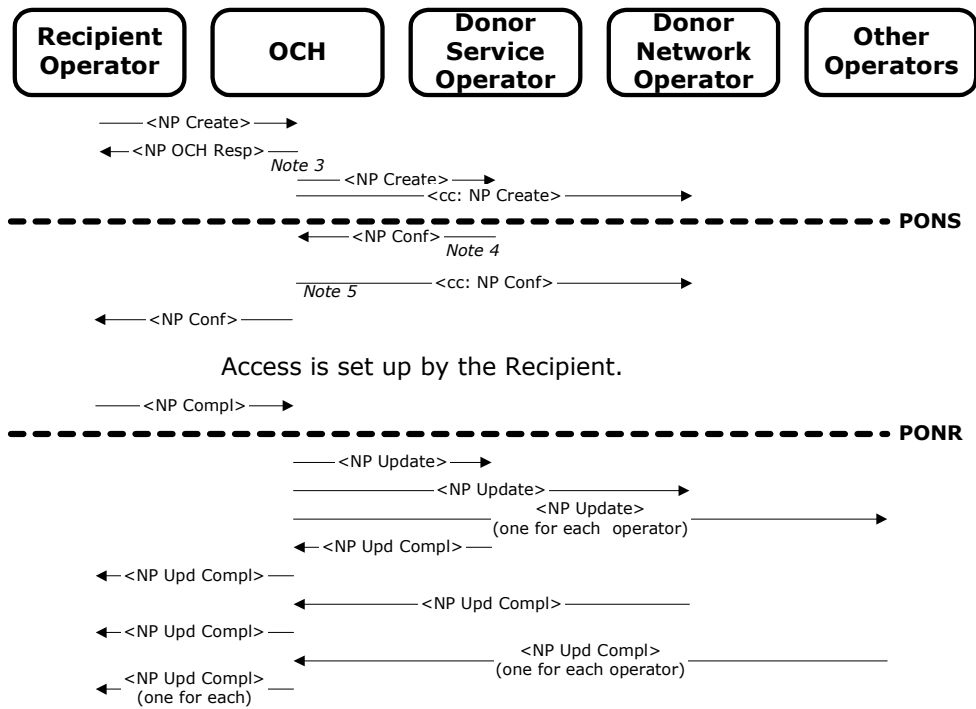


Figure 8 - Operator Porting - Service Provider as Donor

- Note 3: If the OCH System detects any errors in the <NP Create> transaction, the OCH System will return a <NP Error> transaction and will terminate the porting otherwise the OCH System will send a copy of the <NP Create> to the Donor Network Operator.*
- Note 4: If the Donor Service Operator detects a cause for rejection based on the information in the <NP Create> transaction, the Donor Service Operator will return a <NP Reject> transaction, causing the OCH System to terminate the porting after the <NP Reject> has been forwarded to the Recipient Operator and a copy will be sent to the Donor Network Operator.*
- Note 5: The Donor Network Operator is informed by the OCH System using a copy of the <NP Confirmation> message from the Donor Service Operator.*

5.2.5. Operator Porting with Service Provider as Donor Operator and Recipient Operator

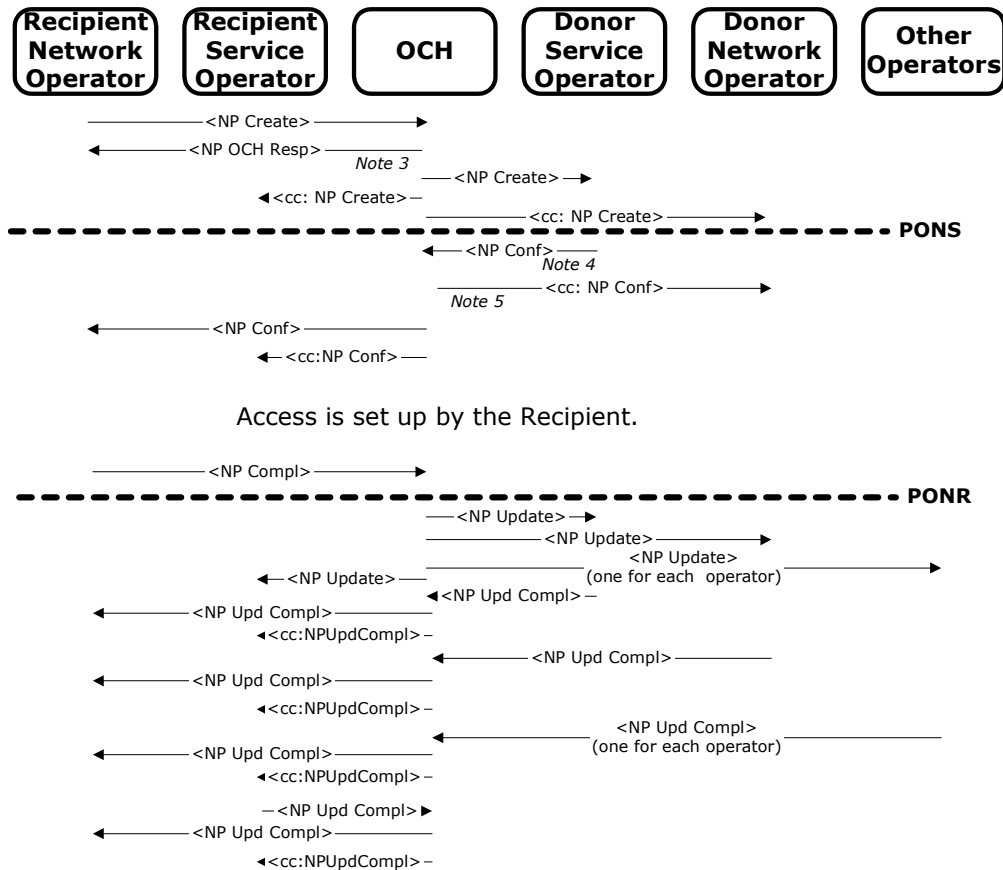


Figure 9 - Operator Porting with Service Provider as Donor and Recipient Operator

- Note 3:** If the OCH System detects any errors in the <NP Create> transaction, the OCH System will return a <NP Error> transaction and will terminate the porting. Otherwise the OCH System will forward the <NP Create> to the Donor Service Operator and send a copy of the <NP Create> to the Recipient Service Provider.
- Note 4:** If the Donor Service Operator detects a cause for rejection based on the information in the <NP Create> transaction, the Donor Service Operator will return a <NP Reject> transaction, causing the OCH System to terminate the porting. The OCH System will forward the <NP Reject> to the Recipient Network Operator, Recipient Service Operator and Donor Network Operator.
- Note 5:** The Donor Network Operator is informed by the OCH System using a copy of the <NP Confirmation> message from the Donor Service Operator.

5.2.6. Termination

In the following flow Point of No Return has no meaning, because the work has been done and current operator is informing the other operators through the OCH System about the changes. Therefore <NP Cancel> has no relevance.

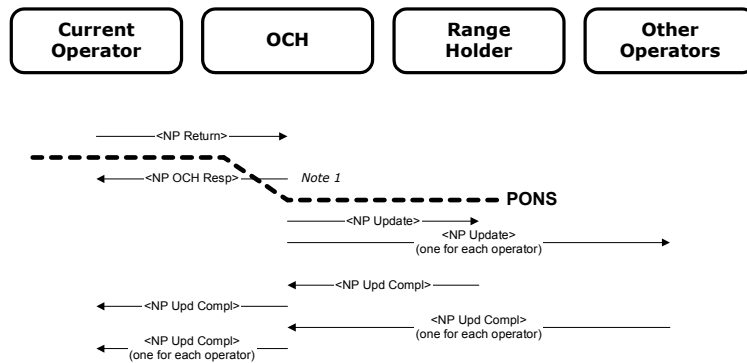


Figure 10 - Termination

Note 1: If the OCH System detects any errors in the <NP Return> transaction, the OCH System will return a <NP Error> transaction and no operators will be advised and the flow terminates.

5.2.7. Geographic Porting

In the following flow Point of No Return has no meaning, because the work has been done and current operator is informing the other operators through the OCH System about the changes. Therefore <NP Cancel> has no relevance.

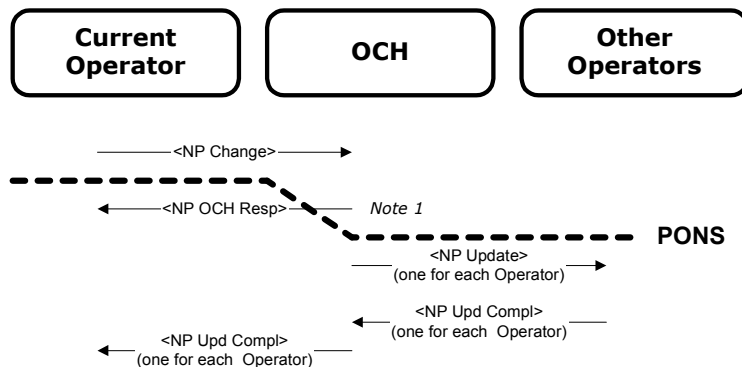


Figure 11 - Geographic Porting

Note 1: If the OCH System detects any errors in the <NP Change> transaction, the OCH System will return a <NP Error> transaction and no operators will be advised and the flow terminates.

5.2.8. Function Porting

In the following flow Point of No Return has no meaning, because the work has been done and current operator is informing the other operators through the OCH System about the changes. Therefore <NP Cancel> has no relevance.

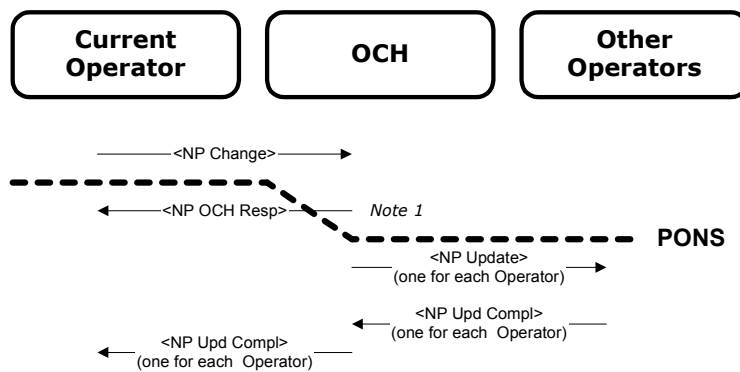


Figure 12 - Function Porting

Note 1: If the OCH System detects any errors in the <NP Change> transaction, the OCH System will return a <NP Error> transaction and no operators will be advised and the flow terminates.

5.2.9. Range Update

In the following flow Point of No Return has no meaning, because the work has been done and current operator is informing the other operators through the OCH System about the changes. Therefore <NP Cancel> has no relevance.

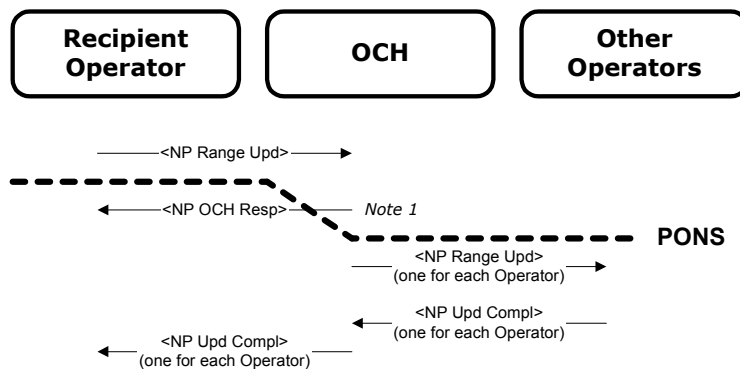


Figure 13 - Range Update

Note 1: If the OCH System detects any errors in the <NP Range Update> transaction, the OCH System will return a <NP Error> transaction and no operators will be advised and the flow terminates.

6. Unresolved Issues

- Sharp definition on how to port ISDN main number with subsequent MSN 'under numbers' and other linked number situations. And how to port or not port part of such a structure.

6.1. Escalated problems