Rules and Procedures for

Number Portability

Fixed to Fixed
Fixed to Mobile
Mobile to Fixed
Mobile to Mobile
Machine to Machine

(Administrative & IT Processes)

Version 2.5

Document No.: RulesProcedure - NPP26_025.docx

17th December 2014

Approval information

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

Change control specification

The Project Leader Group (NPA) has approved the baseline document (without revisions).
This document will be amended (clarifications, corrections and improvements) by the
Administrative Process Group (NPP) 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 NPA 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.

This document has been produced in accordance with the TI directive of November 14th, 1999.

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Revision history

Revision	Description	Date
1.5A	Changes have been included in 4.1	10. February 2002
1.5B	Definition of Range Holder in 2.2. Definitions are changed.	12. June 2002
	How OCH A/S shall act when a new Operator is to be connected to the OCH System, has been added to 3.3.5. OCH and Operator responsibilities.	
	Section 4.1.4 Mobile Number Series is split into 4.1.4. Two or more numbers on one SIM card ported using one < NP Create>	
	A new note is added to figure in 4.4. Operator Porting – Flows.	
	A new section 4.9.4. Forced closing of flows before PONR is added.	
	Figures in 5.2. Transaction Usage is corrected.	
1.6	1.5B has been lifted to 1.6 approved by NPA	26. September 2002
1.6A	Reference to "Bilag 6" has changed.	27. November 2002
	Note about cross porting changed.	
	New entry under Unresolved issues.	
1.6B	Added information about activation and porting 90 numbers	22. October 2003
	Added information for the NP_Return transaction	
	Removed entry under Unresolved issues.	
1.6C	Added information about activation GSM and 70 and 80 numbers (section 4.4.7 and section 4.4.8). Hereby no unresolved issues.	24. November 2003
	Added mobile type II in section 4.4.1	
	Unresolved issue from Transactions document is moved to this document.	
1.6D	Description of Geographical Information in section 1.4 is enhanced.	22. April 2004
1.6E	List of contents and list of figures updated	22. May 2004
1.6F	Ethical guidelines section 3.2 is included	22. June 2004
1.7	1.6F has been lifted to 1.7 approved by NPA	13. September 2004

1,7A	Added section 0 The Number Portability Agreement can be found of the homepage for Danish Telecom industry : http://www.teleindu.dk/branchesamarbejde/nummerportabilitet/ Handling of	9. November 2004
1.7B	In section 3.1.2 Link to Danish Word document deleted	25. April 2005
1.7C	Added info regarding using ICC for PostPaid GSM instead of Power of attorneys. Added timeline figure in section 3.2.2. Added the responsibility to correctly update the current Service Operator in section 3.3.1. Added section 3.3.1.1 Process description for creation of RoutingInfo and ChargingInfo The last part of section 3.3.2 has been deleted. Added section 3.4.1 Process description for creating and deleting Reject codes on OCH Re-wrote section 4.1.5 Mobile Number Series Added section 4.1.6 Usage of Type II Number Series (NP Create, NP Change) Minor clarifications in several sections.	4. January 2006
1.7D	Clarified section 3.3.2 Donor Responsibilities and 3.3.3 Recipient Responsibilities in regards to ICC instead of Power of attorney handling.	6. March 2006
1.7E	Updated according to paper from NPA (NPA meeting 30th Marts 2006). The comments concerning "No longer valid" 3.3.2 is not implemented.	21 April 2006
1.7F	Updated according to paper from NPA (NPA meeting 21st of April 2006)	17 May 2006
1.7G	Changed faulty figure in 3.3.2.	24 May 2006
1.7H	Changed description of 3.3.1.1 Process description for creation of RoutingInfo and ChargingInfo. Changed 3.3.2 and 3.3.3 w.r.t. disconnection	21. June 2006
1.7I	Changes according to new handling of correct Service Operator	6. Sep. 2006
1.7J	Changes in 3.3.1 and 3.3.2 according to NPA mail 27/9-2006	10. Dec. 2006
1.7K	Changes in 1.1 and 4.4.5 according to new handling of correct Service Operator. Minor Changes in 3.3.1	08. Jan. 2007
1.7L	According to NPA decision 01.03.2007 the last bullit in 3.3.2 is reinstated to the 1.7-version	23. March 2007
1.8	1.7L has been lifted to 1.8, approved by NPA and Samtrafik	3. May 2007
1.8A	4.10.5, 5.1.8 regarding forced closing of flows.	13. June 2007

1.8B	Changes in 2.2, 3.1.2.3, 3.3.2	25. September 2007
	NPP har på trods af punkt 1.4.1 holdt fast ved kravet om at donor skal svare senest næste arbejdsdag jf. 3.3.2.	
1.8C	Changes in 2.2, 3.1.2.3, 3.3.2 and 3.3.3	22.oktober 2007
1.8D	Changes in 3.1.2.3 after NPA-meeting 31-1-0831-1-08	20.februar 2008
	NPP Meeting: Inserted in 1.1 – secured numbers	
	Changes section 3.3.4 to 3.3.5 and inserted new 3.3.4 Network Operators responsibility	
	Inserted 3.1.2.4 ICC-number analyses	
1.9	Gennemgået på NPA møde 24.4.08	24.04.08
1.9A	Changes in 2.2 and exchanged the term written termination with power of attorney throughout the document.	09.12.2008
1.9A	Changes in 2.2. - the terms of electronically based power of attorney – confirmed mail. Insert new section in 3.1.2 – 3.1.2.3 electronically based power of attorney. Due to inserting a new 3.1.2.3, the present 3.1.2.3, 3.1.2.4 has changed to 3.1.2.4 and 3.1.2.5	04.02.2009
1.9A	Changes in 2.2 - the terms of electronically based power of attorney confirmed mail. Insert new section in 3.1.2 – 3.1.2.3 electronically based power of attorney. Due to inserting a new 3.1.2.3, the present 3.1.2.3, 3.1.2.4 has changed to 3.1.2.4 and 3.1.2.5 and clarifications in definitions.	29.04.2009
1.9B	Review of references between R&P and the Standard Number Portability Agreement. Change of mail to e-mail throughout the document. Change of CI and RI to RI and CI throughout the document. Change of customer to end-customer and user (end user) to end-customer throughout the document. Changes to bullets: 1., 1.1, 1.2, 2.2, 3.1.2.4, 3.1.2.5., 4.1, 3.2, 3.3.1.1, 3.3.5, 4.3, 4.4.1, 4.4.5. Removal of bullet 6.1 because of no relevance.	29.04.2009
2.0	New version approved on Samtrafik – 20052009 – document change to version 2.0	20-05-2009
2.1	New version due to new Tele Act. 4.3 Timing Information Deleted statement about reject 377 4.4.1 updated 4.1.5 deleted 4.1.4 updated 4.1.6 updated 3.3.3 updated 4.4.6 new	21-01-2011
2.1b	3.2 Ethical Guidelines for Number Porting	14-04-2011
2.1c	english version of ethical guidelines	14-04-2011
2.1d	General updates, danish version of equalisation of expenses	03-05-2011

2.1e	English version of equalization of expenses, ethical guidelines moved out to NP agreement	10-05-2011
2.1f	Updates after Samtrafikmeeting 18-05-2011 Ecthical guidelines removed from R&P to NP agreement Update of equalization of expenses – deleted 5% administration fee Changes of The equalization of expenses is calculated per telephone number, which for example means that a type 2 porting with 50 telephone numbers, would mean 50x the equalization amount. If a porting contains more than 100 telephone numbers, the total amount of equalization is to be agreed between the 2 involved Operators. Rettes I henhold til NP-aftalen If a porting contains more than 100 telephone numbers in one porting-agreement with the same end-customer, and any further claims must be regulated according to NP agreement §11,	18-05-2011
2.2	Update to version 2.2 after approval in Samtrafik-gruppen	18-05-2011
2.3	Gramma mistakes during the document.Info about 12 digit numbers added to front page, chap. 1 and 2 RI/CI codes for 12-digit numbers	12-12-2012

2.4	Name-conversion:
	     PLG > NP – Ansvarlig = NPA
	     APG > NP Processer NPP
	     UGP > NP kundesupport NPK
	     NTG> NP Teknik NPT
	Changed operator to Operator throughout the document
	1.1 Mobil to fixed is deleted
	2.2 Reserved number has been more specified3.1.2.6 Number Analysis – new
	3.3.1 Operator responsibility has been updated with Operator Information on OCH online
	3.3.1.1 Process description for creating new Routing and Charging
	3.3.1.2 Rejecting an application for RI/CI
	3.3.1.3 Implement, Update or Delete Number Ranges
	4.1.1 porting of number series updated
	4.1.5.1 Type II for mobile - new	

2.5	Inserted 3.4 Clarification of rules applying when a customer who has an open NP flow has filed for bankruptcy Change of references to internetpages during the document 2.2 definitions: in use changed 3.3,2 Donor Operator Responsibility: 2. bullet changed 5. bullet inserted 6. bullet changed 4.2 Timing Information if no requested….. inserted	Approved 17/12-2014

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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 (NPP96) 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.

As of May 2013 it will be possible to use 12-digits numbers in Denmark. The rules and procedures in this document also supports 12-digits numbers.

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.

OCH A/S has) decided to enforce the principle about ensuring correct update of the field Service Operator.

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.

As of 2011- 24th of May the Danish number plan has been enhanced to also support 12 digits numbers primarily for Machine to Machine communication. "Vejledning til den Danske nummerplan punkt 10.1."

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

Meaning 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.

1.3.5.   Machine to Machine

Meaning porting of one or more 12-digits mobil (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. These numbers are typically used for dataconnections between two units. These 12-digits mobile (GSM) network numbers are implemented with dedicated RI/CI numbers. A 12-digits mobil number cannot be ported to a 8-digits mobil (GSM) network numbers with a RI/CI connected to a 8-digits mobile network numbers.

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. *The transaction document defines the field OperatorID.*
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. *The transaction document defines the field Municipality code, where the special code '000' defines the whole of Denmark.*

Requirement	Description
Porting Case	Information defining which parameters in the administrative interface that shall be used for routing and charging. *The transaction document defines the field PortingCase, which holds the information.* The field PortingCase can have three values: 'NonPorted' (PortingCase 0 [NPT 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. *The transaction document defines the field RoutingInfo, which holds the information.*
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. *The transaction document defines the field ChargingInfo, which holds the information.*
Interconnection Point	The information is the Network Indicator and the Signalling Point Code for the exchange. *The transaction document defines the field SPC, which contains the network indicator and signalling point code for the telephone number's current exchange.*

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, VoIP).
- 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

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))
LSO	Logical Service Operator (Service Operator without connection to OCH)
M2M	Machine-to-Machine

2.2. Definitions

Please refer to 2.3. Reference Model on page 20

Term	Definition
Power of attorney, written	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.

Term	Definition
Power of attorney Electronically based	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.

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.
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 which can be entered into bilaterally between the Operators.
Bilateral agreement on ICC solution	Bilateral agreement on ICC solution is an agreement which can be entered into bilaterally between the Operators
Bilateral agreement on Customer-ID solution	Bilateral agreement on Customer-ID solution is an agreement which 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. Can be found at OCH-online, Operator Information

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

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 the operator is routing traffic to the number. If the number is temporally suspended i.g. due to lack of payment it is still in use and can be ported. If a telephone number is finally disconnected i.g. due to lack of payment, it is no longer in use, and the operator is no longer obliged to export the number.
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). Both 1) and 2) can be disregarded by the end-customer if he accepts to pay the remaining fees to the donor Operator.
Reserved numbers	The number is reserved to a specific end-customer but is not currently in use in the network. In some cases the donor Operator needs to make numbers portable prior to receiving the NP_Create. The possible cost for making reserved numbers portable must be specified in the contract between donor operator and the end-user.
Machine-to-Machine	Porting of one or more 12-digits mobil (GSM) network numbers. These numbers are typically used for dataconnections between two units. These 12-digits mobile (GSM) network numbers are implemented with own RI/CI numbers. A 12-digits mobil number cannot be ported to a 8-digits mobil (GSM) network numbers with a RI/CI connected to a 8-digtis mobile network numbers.

When porting within one Operator, that Operator is both dor 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 15.
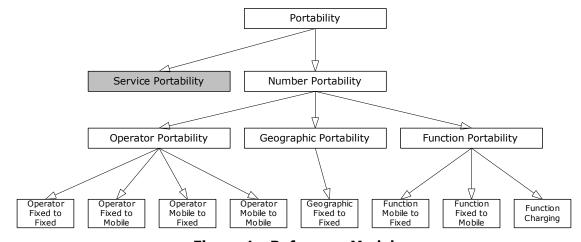

Figure 1 - Reference Model

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.

The Number Portability Agreement can be found of the homepage for Danish Telecom industry : http://www.teleindu.dk/branchesamarbejde/nummerportabilitet/

3.1.2. Handling of power of attorney

3.1.2.1. Minimum requirements (written power of attorney)

The written power of attorney can be send by fax, letter or e-mail to the donor Operator according to the donor Operator guidelines, 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 7.5 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:

- ❑ ICC number/Customer ID number, cf. appendix X (the latest version can be found on teleindu.dk http://www.teleindu.dk/t2w_370.asp)
- ❑ 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/CustomerID Solution, see http://www.teleindu.dk/branchesamarbejde/nummerportabilitet/ When using the ICC/CustomerID solution the recipient Operator holds the power of attorney 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.
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 NP_Create immediately upon receive of the transaction without further documentation, or the donor Operator may request the power of attorney to be forwarded.

3.1.2.5. ICC number analysis

An ICC number analysis is where a receipient Operator asks the donor Operator to inform the receipient Operator of the ICC-numbers of the end-customers telephonenumbers. 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 snapshot and therefore discrepancies can occur.

3.1.2.6. Number analysis

A Number analysis is where a recipient operator asks the donor operator to inform the recipient operator of the end-customers telephone numbers and configuration.
A valid end-customer-relationship must be in place when recipient operator asks for a number analysis at the donor operator. The requirement of a valid customer relationship   will not be applicable if the number analyse is required due to a public procurement. It is optional for the Operator to offer the Number analysis.

The request for a number analysis must be sent by e-mail and must contain:
Input: (must be sent from Recipient Operator)
Customer Name and Contractmanager
CVR number and CustomerID
Main number (best guess that the customer and Recipient Operator thinks)

Recipient Operator must be able to document a valid customer relationship and must provide for this if asked by Donor Operator. Recipient Operator must forward the documentation for valid customer relationship within 5 working days.

Output: (must be provided and sent from Donor Operator)
CVR number and CustomerID(s)
Contractmanager
The end-customer configuration
Main number
All numbers including number series and reserved numbers
- Fixednet
- Mobile
Information about Alarm lines/numbers and other conflicting products

Donor operator must inform the Recipient Operator if there is any cost associated with making reserved numbers portable. The Recipient Operator has the responsibility to inform the end-customer about the cost and inform the Donor Operator if the numbers must be made portable.

The result of the number analysis must be forwarded within 10 working days. The request from donor operator of documentation for valid customer relationship must not cost any delays on forwarding the result of the number analysis.
The number analysis will always be a snapshot and therefore discrepancies can occur.
The Donor Operator is allowed to charge a price for the Number analysis. The price has to be agreed upon in the Number Portability agreement between the two operators.
If the customer is registered under another CVR number with Donor Operator it cannot be used as a rejection cause and Donor Operator must also inform Recipient Operator of the CVR number that the customer is registered under with Donor Operator.
Donor Operator can of course ask for documentation of valid customer relationship.

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. Compensation to the end-customer

According to legislation, section 7 in Televoven entering into force as from 25. May 2011, an end-customer is entitled to compensation if the porting of a number is delayed, in case of improper porting, or if the number to be ported is without telephone connection for more than 24 hours.

The end-customer's Operator is responsible for defining the rules and conditions for compensation, making them available for the end-customer, and handling complaints from end-customers regarding portings.

If an Operator has given an end-customer compensation for delay, improper porting or missing connection, this Operator may under certain circumstances have the right to require equalization from the other Operator involved in the porting.

3.2.1. Rules of Equalization

1. The rules of responsibility are set by the industry itself according to the new Telecom Law L 59, section 7. Rules in case of delay or misuse of number portability are found in the NP standard agreement, and mentioned in Rules and Procedures.
2. The Recipient Operator has the responsibility for handling all error types, and assessment of the end-customers claim for compensation, and if approved, give the end-customer the given compensation.
3. In cases of improper portability, the end-customer can contact either the Recipient Operator, or the Donor Operator. The Operator which the end-customer contacts first, is obligated to take responsibility for handling and assessing the end-customers claim, and in approved cases, pay the compensation to the end-customer.
4. Cancellation of NP flows is to be executed at 12 PM the workday before Confirmed Execution Date at the latest. If the cancellation is not executed correctly, it is not considered to be part of the Rules of Equalization.
5. All Operators are obligated to put their rules for compensation in relations to Number Portability in their Terms of Agreement.
6. If an end-customer in a specific case has received compensation from the Recipient Operator, the Recipient Operator will assess from the Rules of Responsibility, if there should be made a demand towards the Donor Operator, within the boundaries of the Rules of Equalization.
7. The economical demand shall in any given case be calculated within the boundaries that the industry has set in the Rules of Equalization. In addition to the compensation and equalization between the involved Operators, a demand of liability can be requested according the standard NP agreement § 11, The compensation amount paid to the end-customer has to be minimum the amount of equalization.

The equalization of expenses is calculated per telephone number, which for example means that a type 2 porting with 50 telephone numbers, would mean 50x the equalization amount. If a porting contains more than 100 telephone numbers in one porting-agreement with the same end-customer, and any further claims must be regulated according to NP agreement §11,

3.2.2. Allocation of responsibilities

A claim for economical reimbursement through the Rules of Equalization, can only be made when the end-customer has received the compensation because of the following 3 reasons
- A) Delay*,
- B) Lack of connection for more than 24 hours, or
- C) Improper porting.

1. For error type A) and B) the porting must be completed on The OCH System with an NP Complete before any claim of equalization can be raised. Such claim must be addressed within 30 days after the end-customer has received the compensation. For error type C) the porting must be ongoing, and the claim for equalization must be raised within 30 days at the most after the improper porting is returned to the Donor Operator.

2. For error types A) and B) in the above item 1 section, the process of equalization is initiated by the Recipient Operator, as it will be the Recipient Operator who has the main contact with the end-customer. The claim for equalization is sent by E-mail to the Donor Operator according to the mailing list, containing the telephone number(s) along with the total amount of equalization and a short description.

3. For error type C) in the above item 1 section, the process of equalization is initiated by the Donor Operator, as it will be the Donor Operator who has the main contact with the end-customer. The claim for equalization is sent by E-mail to the Recipient Operator according to the mailing list, containing the telephone number(s) along with the total amount of equalization and a short description. In cases where the end-customer has received the compensation from the Donor Operator according the Donor Operators Terms of Agreement, the Donor Operator can claim full economical reimbursement for the compensation amount if it exceeds the amount written in the Rules of Equalization, according to the NP standard agreement § 11, If the Recipient Operator has paid the compensation to the end-customer, there can be made no claim for equalization from the Donor Operator. For error types A) and B) the Donor Operator can ask for documentation that the Recipient Operator has paid compensation to the end-customer. For Error type C) the Recipient Operator can ask for documentation that the Donor Operator has paid compensation to the end-customer.

4. Claims for equalization are calculated from the allocation of responsibilities and the rules of Equalization of Expenses set by the industry itself.

5. It is legally liablefor an Operator to cause the failure types under the appropriate positive list in the section above in R&P, provided that the Operator has contributed to the delay etc. The positive list is not exhaustive, but will be regularly updated.

6. Operators Clearing House (OCH) is not a part of the compensation rules the industry has set. The Recipient Operator will therefore not receive equalization, if the Donor Operator has no responsibility, but the fault lies with The OCH System.

*)   This means a delay, when the connection to and from the end-customers telephone number between the end-customer and Recipient Operators agreed porting date has been definitively established, however starting at the earliest after expiry of the next business day**).
**) Business days are all weekdays not included 1.5, 5.6, 24.12, 31.12.

Allocation of Responsibilites between Operators

Operator 1	Operator 2	Definitive allocation of the total amount of equalization between Operator 1 and 2 (in %)
Error committed by Operator 1	No error	100 / 0
Error which starts a faulty flow, which is crucial for the acceptance of a compensation claim	Is not expected to locate and fix error from Operator 1	100 / 0
Error which has participated to the acceptance of a compensation claim	Error which has participated to the acceptance of a compensation claim	50 / 50

NOTE:
"Error" is meant as the error type according to the positive list in Rules and Procedures, provided that the Operator has contributed to the delay etc. The positive list is not exhaustive, but will be regularly updated.
Equalization of expenses is settled along with other NP fees once a month. Equalization of expenses is calculated without VAT.
Every case of equalization should be stated with code, telephone number and a description.

3.2.3.   Error types and equalization amount

1. **Improper porting**. (If Recipient Operator completes porting without acceptance from the end-customer). Must trigger compensation after request from the customer, and the possibility of equalization according to the standard NP agreement § 11.)
   XXXX DKK. in equalization amount to the Donor Operator.

2. **Delayed porting.** Starting point is the time of porting that the Recipient Operator has agreed with the end-customer, though earliest at the end of the next business day.The time aspect can be important to the end-customer. Therefore this will result in compensation after the end-customer has contacted the Recipient Operator, according to the Recipient Operators Terms of Agreement.
   XX DKK. as a onetime payment, in addition X DKK. per following calendar day.

3. **Lack of connection.** If the end-customer is without connection in more than 24 hours. The time aspect is crucial to the end-customer. Therefore this will result in compensation after the end-customer has contacted the Recipient Operator, according to the Recipient Operators Terms of Agreement.
   XXX DKK. as a onetime payment, in addition XX DKK. per calendar day.

All amounts are determined in the at all times existing NP standard agreement.

3.2.3.1.   Specification of equalization types.

Code

1000	Porting date is maintained
1001	Traffic is disconnected
1002	Lack of SIM Card
1003	Lack of Copper/Fiber/Ribbon
1004	Operators lacking to respond to an NP Update on The OCH System.

2000	Porting is canceled
2001	Recipient Operator hasn't canceled flow before Confirmed Execution Date.

3000	Porting date not maintained. Porting date pushed forward in time.
3001	Donor Operator confirms to a different date than asked in the Requested Execution Date
3002	Recipient Operator asks for a different date than agreed with the customer
3003	Recipient Operator asks for an impossible date, though agreed with the customer
3004	Donor Operator rejects due to a lack of Power of Attorney
3005	Donor Operator rejects due to a wrong Power of Attorney though the information is correct
3006	Donor Operator rejects due to wrong ICC number/CustomerID, though the information is correct
3007	Porting not started by Recipient Operator, or an error occurs on The OCH System.

4000	Fraud
4001	Invalid Power of Attorney
4002	Improper flow started on The OCH System, but Recipient Operator cancels flow.
4003	Traffic is disconnected

5000	Recipient Operator starts an <NP Create> without an agreement with the end-customer
5001	Improper flow started on The OCH System, but Recipient Operator cancels flow.
5002	Traffic is disconnected

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. The information can be broadcasted using the OCH Helpdesk.
- Operators who need to perform large number of transactions exceeding normal operation (currently 2000 transactions or more) must order a service window through the OCH A/S
- 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.
- 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.
- Operator information must at all times be updated with all mandatory fields in OCH online. The Operator information contains information that are used in the daily work.. Further guidelines and help can be found in the OCH Online under Info; Documentation; Guidance

3.3.1.1. Process description for creation of new Routing and Charging and implementing new number ranges.

The process involves the following 2 instances:

- 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 cannot be the equivalent of a number range which is greater than the said Number Range. If an Operator runs out of numbers and therefore byes more numbers from Erhvervsstyrelsen, then the Operator can use the same RI/CI for those new numbers.

  If an Operator wants to use 12 digits numer ranges, then the Operator must apply for a new RI/CI code. A RI/CI code for 8 digits number range cannot be used for at 12 digits number range.
  The requesting Operator updates Samtrafik-aftaler to reflect the future use of the new RI and CI.

  Then the requesting Operator applies for the RI/CI through OCH using the OCH role OPERATOR_ADMIN.

  The combination and syntax rules of the information used for applying for RI/CI are described in NPP96.

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

The application of the RI/CI with the relevant information results in a mail sent to all OCH Operators from OCH using the e-mail specified in OCH-Online, Operator List in the field Number & RI/CI Responsible email.

- The OCH Operators.
  Upon receival of the application request from OCH the Operators must check the "Samtrafik-aftaler".

  The Operators can reject the application within 14 days. If no such rejection has been received the application is automatically approved and will result in an update in OCH of "Godkendt RI/CI".

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

3.3.1.2. Rejecting an application for RI/CI

An Operator can reject an application for RI/CI by another Operator in OCH within 14 days after receiving the application by using the OCH role OPERATOR_ADMIN. An explanation must be entered as to why the application has been rejected by the Operator.
A rejection of an application for RI/CI will result in an email to the applying Operator and the other OCH Operators with information about who has rejected the application.

An application cannot be rejected after the 14 days waiting period.

The combination and syntax rules of the information used for rejecting an application for RI/CI are described in NPP96.

3.3.1.3. Implement, Update or Delete Number Ranges

The Range Holder or if the Range Holder is a Service Operator which is not directly connected to OCH – the Network Operator, send a NP_Range Update with RangeUpdateType I, U or D to OCH. OCH will send the NP_Range_Update to all Operators and send an email to the Number RI/CI responsible email specified in Operator Information (OCH Online). The required changes due to the NP Range Update must be implemented at each operator within 4 weeks after receiving a NP_Range Update.
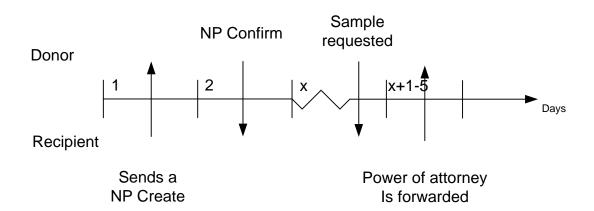
3.3.2. Donor Operator Responsibilities

When executing a porting of a number, the donor Operator has the following responsibilities:
- 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 NPA of the syntax of his Customer-ID and ICC number and where the end-customer can retrieve this information. The syntax information can be found on OCH-online, Operator Information. Each operator has the responsibility to maintain the syntax information at all time.
- when a donor Operator receives a number portability order (<NP Create>), he shall respond according to the data flow model one hour 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.
- If the recipient operator cancel a porting, the donor operator must cancel the pending disconnect order for that telephone number in his systems.

1) If ICC field or Customer-Id field is used the donor Operator must respond according to the data flow model one hour before the end of normal office hours the following working day.
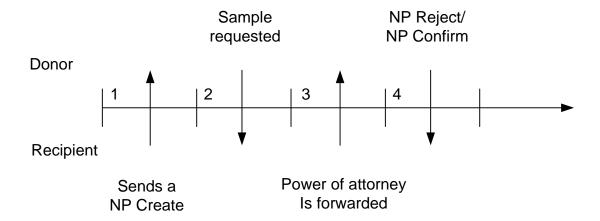
 The model below shows the flow where the flow is confirmed and afterwards a Power of attorney is requested by the donor.

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.

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 - for further info see 4.2 Timing Information)) the donor Operator shall inform <NP Confirmation> the recipient Operator about the execution date.
- The Donor Operator must comply with any "wanted execution date" beyond today, and set "confirmed execution date" = "wanted 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).
- 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 Responsibilites

As a fix-line networksOperator the requirements from 'Bekendtgørelse om sikring af offentlige telenet og teletjenester' must be fullfilled 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 and Operator responsibilities

When a new Operator wants to engage with OCH A/S, the Operator is expected to contact OCH A/S at least one month before the expected launch date.

Before a new Operator is connected to the OCH system, OCH A/S 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 system.
- The name of the contact person at the new Operator, which the existing Operators must contact regarding number portability issues, is broadcasted to Operators connected to the OCH system.
- A list of Operators is available on OCH-Online (https://och.evenex.com/och-online). The list contains addresses for daily contacts, the commercial responsible of the Operator, the technical responsible of the Operator etc.

This must be completed at least 10 working days before the Operator is actually connected to the OCH system.

When a new Operator is connected to the OCH system or a Operator is changed or deleted, the OCH A/S must supply the following information at least 10 working days before connection/change or disconnection date to the existing Operators using OCH system:

- Operator ID
- Operator Name

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 new Operator wants to implement number ranges in the OCH system, then the Operator immediately must inform the other Operators by sending relevant NP Range Update transactions, see section 3.3.1.1. The NP Range Update must contain at least the following information:
- Operator ID
- Routing Info
- Charging Info
- SPC
- NumberType

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 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.

3.4. The endcustomer has been filed for bankruptcy

3.4.1. Filed for bankruptcy without any open NP flows

If an endcustomer has been filed for bankruptcy Donor operator is obliged to reject any porting flows received from other operators after the file for bankruptcy unless a Power of Attorney is signed by Curator of the bankruptcy.

3.4.2. Filed for bankruptcy after confirmation of NP flows

If an endcustomer has been filed for bankruptcy and there are open NP flows Donor operator is obliged to request the Recipient Operator to cancel the NP flows. The documentation for cancelling the open NP flows must contain information about who the Curator is.

The cancellation must be done by Recipient Operator before confirmed execution date or within 5 working days.

3.4.3. Handling of numbers in the bankrupt company

In order to port numbers covered in the bankruptcy Recipient Donor must have a Power of Attorney signed by Curator concerning the numbers to be ported. The Power of Attorney must be sent to Donor Operator.

3.5. 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.

3.5.1. 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.

```
┌─────────────────────────────────────┐
│  Processdiagram for creating/deleting and │
│       distributing Rejectcodes          │
└─────────────────────────────────────┘
```

Requester

Need is identified

Request is rejected

NPP (NPP chairman)

Rejectcode is created and current list is updated in the latest approved version of Requirements/ Transactions

OK

R/T is forwarded

Request is forwarded

NPA (NPA chairman)

NPA chairman inserts the request for the nextNPA meeting

The request is discussed at the NPA meeting

NPA Expedites — OK

Rejectcode

Ok or rejected

R&P + Trans.doc

Ok or rejectiiong

Samtrafik (ST chairman)

The request is approved or denied

The current version is confirmed with new version

New version of R/T is forwarded

New version of R/T is forwarded

TI

TI ensures that the latest list is updated on the TI homepage

New version of R/T is forwarded

Operators (PLG members)

Rejectcode is implemented into the administrative systems

OCHs Technical Group

Implementing into OCH Systems

- 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 NPA.

- The chairman of the NPA.
  Upon receival of the request the chairman puts it on the agenda for the next NPA meeting.

- "Samtrafik"
  A change of reject code must be sent to "Samtrafik" for approval.

- The chairman of the NPA.
  If the request is rejected the requester is informed by this by the chairman of NPA.

  If the request is approved the chairman forward the information to the chairman of the NPP.

- NPP
  The change of reject code is inserted in the current approved Requirements/Transactions (R/T) documents.

- NPA
  NPA 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 NPA.

- NPA.
  NPA 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 receival 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 NPA 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 VoIP 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 a 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.
Number series is allocated to one end-customer and can be defined with one main number with one or more unbroken series

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.

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>

If a mobile number series used for voice, data and/or 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.

4.1.5. 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.

4.1.5.1.   Type II for Mobile:

If a current operator has implemented a ***consecutive ascending series of Mobile numbers*** of 10 or more numbers as a Type II, then the Recipient Operator must be able to port the numbers using a NP Create Type II.
If the main number is unclear Recipient Operator should require a number analysis from Donor Operator to clarify this.
Such portings requires a written Power of Attorney which must be sent to Donor Operator.

4.2.   Timing Information

If the customer wants to comply with the commitment and termination period at the current Operator, then the recipient Operator sends a NP-Create with requested date = Null (not filled). Donor Operator responds to this by sending confirm date = end of commitment and termination period. If no requested date the confirm date given by donor operator must be end date of all financial agreement, concerning services but exclude installments on hardware, between donor operator and end-customer.
If the customer wants to port-out on a specific date, also within the commitment and termination period, then the recipient Operator set the requested date = specific date from customer and the Donor Operator responds by setting confirm date = requested execution date.
The main rules above is to be followed under these conditions

1. If the Donor Operator receives the NP-Create after 16.00, then the Donor Operator is allowed to consider the NP-Create as received on the following working day, and respond accordingly.
2. If the specific date is on a Saturday, Sunday or Holliday, then the Donor Operator is allowed to confirm to the following working day.
3. 24/12, 31/12, 1/5, 5/6 is not considered as working days.
4. If ICC or customer id is not filled and power of attorney is not received by EOD before the requested porting date, then the Donor Operator is allowed to reject the flow (code 376). If Donor Operator doesn't reject the flow, donor can confirm the flow to the next working day after the power of attorney has been received.

If The Recipient Operator does not accept the confirm date then he may cancel the porting flow. 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. If the Donor Operator and Recipient Operator agree to change

the confirm_date without cancelling the existing flow then Donor Operator has to make a second NP Confirmation based on the mutually agreed execution date.

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.

4.3. 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:
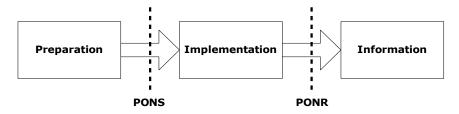

Figure 2 - Process Flow

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.

4.3.1. 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 date[1] 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. Until the requested execution date 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 10 working days from receiving the <NP Create> , 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.

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).

4.3.2.   Service Provider as Donor.

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

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

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.

4.3.3.   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.

4.3.4.   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. The Operator that last updated the Operator field becomes the Operator indicated in the field <u>L</u>ast <u>U</u>pdated <u>B</u>y <u>O</u>perator, LUBO, in the 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.

4.3.5.   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 Telenor then the result will be:
* Service Operator: Hard2Tel

- Network Operator: Telenor
- LUBO: Telenor

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 Telenor as network Operator. Then Cirque who is a Service Operator without OCH link contacts his Service Operator with OCH link: ZachoTel. ZachoTel chooses to ask TDC to import the number into the TDC network and resell the number to ZachoTel.
This is the first step.
The second step is the NP Change issued by ZachoTel where ZachoTel inserts Cirque as Service Operator.

Result after 1'st step (NPCreate flow):
- Service Operator: ZachoTel
- Network Operator: TDC
- LUBO: Zachotel

Result after 2'nd step (NPChange flow):
- Service Operator: Cirque
- Network Operator: TDC
- LUBO: ZachoTel

4.3.6.   Service Provider without link to the OCH system and customer_id

In order to validate customer_id in the NP_create the OCH system needs to have the information about the service providers fixed telephone number and the corresponding customer_id

4.3.7.   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 4.3.1):
        1, 2, 4, 6, 7, 8, 9, 10, 11

4.3.8.   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.

4.3.9.   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.

4.3.10. 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.

4.4. 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.
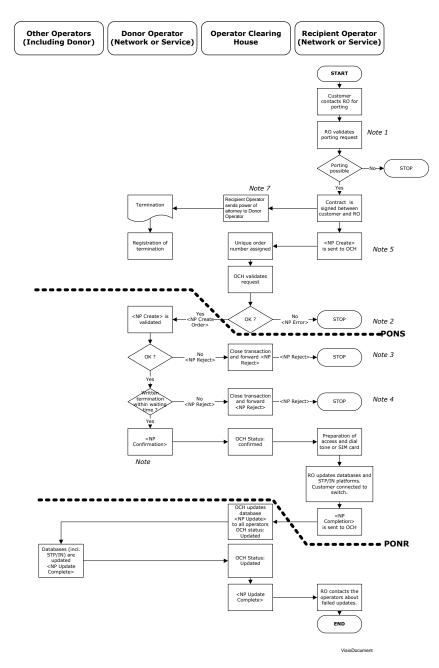
Figure 3 - Operator Porting

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 52, 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.*

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.

4.5.   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 Operator who
sent the >NP Retur>.

4.6.   Geographic Porting – Flows

When the fixed network 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 currentOperator.

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

4.7.   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

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

4.8.   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 Range Holder Operator.

4.9.   Fault Procedures

The fault procedures address the fault situation(s) that might occur during the administrative and physical Number Portability transactions. 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 4.9.1 to 4.9.5.

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

4.9.1.   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.
*   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.

4.9.2.   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.

4.9.3.   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.

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 use the OCH online 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.

4.9.4.   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 helpdesk. It is only to be done after mutual agreement between Donor Operator, Recipient Operator and possible a cc-Operator (recipient of cc-transactions).

4.9.5.   Forced closing of flows after PONR

The Operator who initiated the flow can <force close> the flow using OCH online

Flows which remains open after Point Of No Return for a long period of time often causes problems because the numbers involved cannot 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. (Currently 7 days)

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" (NPP96).

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- or network Operator uses this transaction type only when imported numbers becomes vacant after retention period (The retention period is minimum 3 month and maximum 6 month). 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 by the Range Holder 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

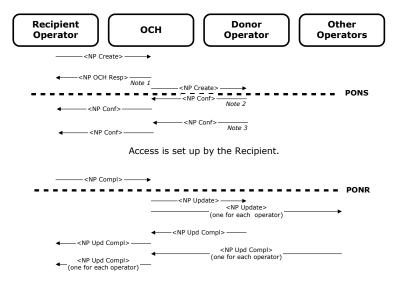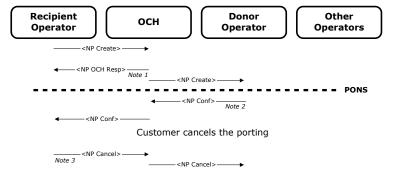Refer to section 4.3.1. Operator Porting for textual information.

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

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.
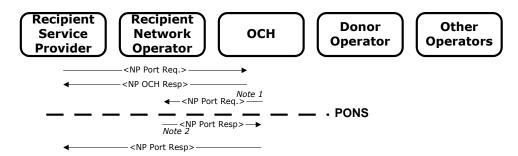

Figure 6 - Porting Request flow

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.
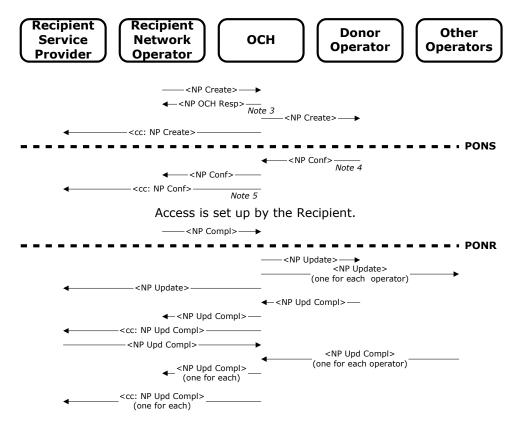
Figure 7 - Operator Porting, Service Provider

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.
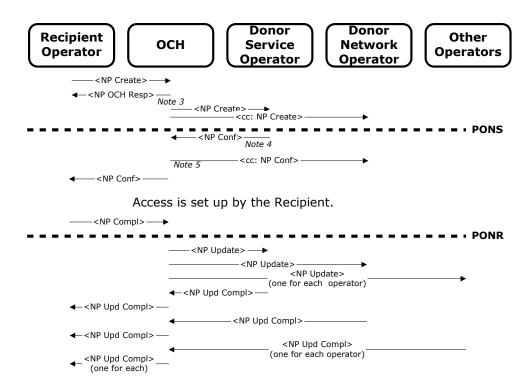
Figure 8 - Operator Porting - Service Provider as Donor

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 and Recipient Operator
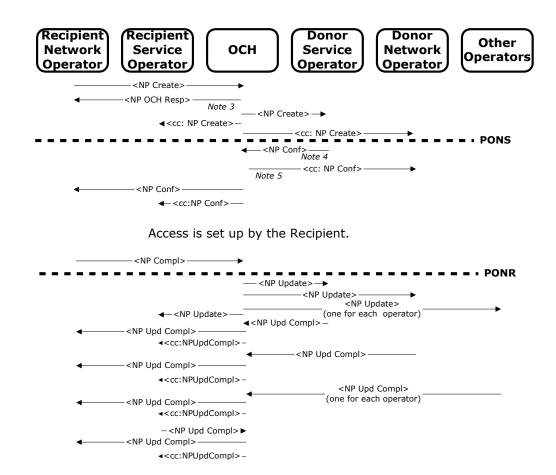

Figure 9 - Operator Porting with Service Provider as Donor and Recipient Operator

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.
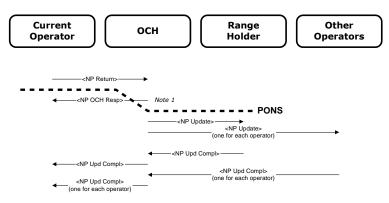
Figure 10 - Termination

*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.
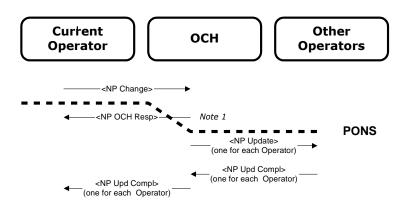Therefore <NP Cancel> has no relevance.

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.
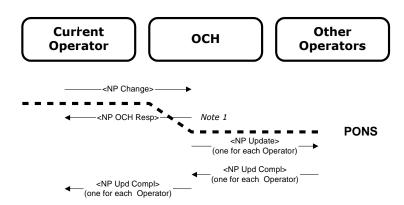Therefore <NP Cancel> has no relevance.

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.
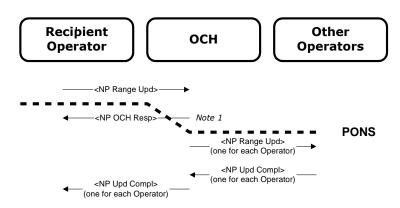

Figure 13 - Range Update

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