# UK MOBILE SWITCHING AND SERVICE TERMINATION PROCESS MANUAL

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# 1 INTRODUCTION

## 1.1 Background

This Manual contains process descriptions and industry guidance for Switching mobile services with number ports using the PAC process, and for Terminating mobile services without transferring the MSISDN using the STAC process. It replaces the current "Porting Process Manual"[1], and includes regulated changes required by Ofcom (effective from 1 July 2019), and revisions to processes for fault escalation, MSISDN Repatriation, and bulk Switching. The Manual has been approved for publication by the mobile industry MNP Operator Steering Group (OSG).

## 1.2 Glossary

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|---|---|
| Account Holder | The person or entity with contractual responsibility for the Customer's MSISDN(s) |
| Adjustment Period | The period available to the RSP for PAC/STAC Cancellation or Switch Day adjustment: 18:00-20:30hrs on Working Days |
| Authorisation Code | The code provided by a DSP to a Customer which authorises Switching (PAC) to another SP, or Service Termination (STAC) on the DSP |
| Auto-Locking | CSS function which automatically Locks PAC/STACs between 20:30-20:45hrs each Working Day |
| Business Rules | The Rules for Switching MSISDNs between NOs and/or SPs using the PAC process, and Terminating services using the STAC process, and providing Switching Information. There are separate Rules for consumer Switching (up to 24 MSISDNs) and bulk Switching (more than 24 MSISDNs) |
| Cancellation | Where a DSP Cancels the Authorisation Code on the CSS following a Customer request to Cancel |
| Closed | Where an RSP has Redeemed an Authorisation Code for a new Customer on the CSS |
| CSS | Central Switching System (previously MNP web system) managed by Syniverse |
| Current Subscription | The entity on the DNO which supports the provision of service against a Switching MSISDN |
| Customer | The user of the MSISDN. Service Providers will only provide Switching Information and Authorise requests to Switch or Terminate where the Customer is the Account Holder, or is authorised by the Account Holder to make such requests and the Service Provider permits this |
| Dealer | A third-party business that acts as an agent for an SP |

[1] Mobile Number Portability Porting Process Manual v1.34 issued December 2017

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|---|---|
| DN/DNO | Donor Network / Donor Network Operator |
| (D)SP | (Donor) Service Provider |
| Early Termination Charge | A charge payable by a Customer to Terminate their contract before the end of a minimum contract period |
| Exceptional Circumstances | Circumstances where DSP and RSP agree that a Switch or Termination is associated with fraudulent activity or has been made erroneously, and should therefore be Cancelled after the deadline set out in Appendix A |
| Exceptional Technical Circumstances | Circumstances where technical problems mean an SP cannot meet the Switching deadline set out in Appendix A |
| INFO | SMS request from a Customer for Switching Information, sent from their current MSISDN to their current CP, using national short code 85075 |
| Locking Cut-off | 20:30hrs on a Working Day (Monday to Friday excluding public holidays) |
| Locking/Unlocking | Locking: manual acceptance by DSP of PAC/STAC submission which prevents further changes other than by Unlocking, which must be agreed with the associated RSP, and must be completed before 20:30hrs (at which point Auto-Locking takes place) |
| Migration | Transfer of a MSISDN from one SP to another where the Network Operator stays the same |
| MNP OSG | The Mobile Number Portability Operator Steering Group |
| MSISDN | Mobile phone number (Mobile Station International Subscriber Directory Number) |
| New Subscription | The entity on the Recipient Network which supports the provision of service against a Switching MSISDN |
| ON/ONO | Original Network / Original Network Operator |
| PAC | Porting Authorisation Code: Uses national short code 65075 if requested via an SMS sent to the current SP from the MSISDN to be Switched |
| PAC or STAC Locking Period | 20:30hrs on a Working Day. (Auto-Locking is actioned on the CSS between 20:30-20:45hrs) |
| PAT | Repatriation file |
| PAR | ONO affirmative response |
| Primary MSISDN | The main MSISDN issued by a SP when service was activated |
| Quarantine Period | Once service is ceased for an MSISDN, the industry norm is that it should not be re-allocated for six months. However, if the MSISDN was Switched-In, it must be Repatriated to the ONO after expiry of the Quarantine Period and must not be re-allocated to another customer of the SP. (NOTE: SPs use different internal systems and procedures for Quarantining). |

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|---|---|
| Redeemed | The process by which an RSP uses an Authorisation Code to activate Switching for the MSISDN(s) presented by a Customer and subsequently Closes on the CSS |
| Register | When the handset is turned on a signal is sent to the ONO and the SIM is registered as active |
| REQ | Switch Request - sent to ONO to activate new routing |
| Repatriation | The process for returning a Switched-In MSISDN to the ONO after its Quarantine period has expired. |
| Residual Subscription | The entity on the Original Network which supports the re-routing of mobile terminating traffic for a Switched MSISDN |
| RN / RNO | Recipient Network / Recipient Network Operator |
| RSP | i) Recipient Service Provider<br>ii) or Switch Response (sent by ONO after an REQ has been received and new routing has been activated) |
| Secondary MSISDN | MSISDN issued by SPs which links additional MSISDNs to the Primary MSISDN |
| Service Termination | The cessation of an account with a previous Service Provider using the STAC process |
| SLA | Service Level Agreement |
| STAC | Service Termination Authorisation Code: Uses national short code 75075 if requested via an SMS sent to the current SP from the MSISDN to have Service Terminated. (NOTE: Ofcom documentation may use the term N-PAC (Non-Porting Authorisation Code)) |
| Switch | Transfer of a MSISDN from one SP to another using the PAC process where the Network Operator also changes |
| Switch Date | The Working Day when either the Switching of a MSISDN from a DSP to an RSP occurs or when service is Terminated on a DSP due to a STAC being actioned |
| Switching Information | The account information to be provided to Customers either with a PAC or STAC or INFO, on request. See definition of “Switching Information” in Ofcom’s General Conditions of Entitlement for full details |
| Switching Report | Details of PAC & STACs closed or Locked on the CSS, provided each Working Day by the CSS to SPs |
| Validity Period | The 30-calendar day period in which an Authorisation Code remains in force. The last day of the Validity Period cannot fall on a non-Working Day; where this occurs the next available Working Day must be used instead |
| Working Day | 09:00-18:00 hours, Monday - Friday, excluding local bank holidays and industry-agreed non-working days |

## 1.3 Porting Authorisation Code (PAC) and Service Termination Authorisation Code (STAC)

This document uses the term 'Authorisation Code' where processes are the same for Switching and Service Termination and makes explicit where processes are different.

Authorisation Codes are valid for 30-calendar days (the 'Validity Period'). The Customer provides the Code to their new RSP when they place an order for their new service. The Customer does not need to talk to the DSP in order to Switch once they have this Code.

## 1.4 Switching Process Design Objectives

The OSG has identified six objectives which underpin the Switching process design. It may not always be possible to meet all of these objectives, but they represent an ideal for which the Switching process aims.

1. Switching shall be seamless and any break in service shall be minimised.
2. The process shall not increase the risk of fraud or abuse of subscriptions.
3. The process shall allow flexibility of implementation.
4. The number of events in the process shall be minimised.
5. The process shall include sufficient controls to monitor service level performance and maintain the integrity of data exchanges.
6. The process shall address recovery from an erroneous Switch, so as to minimise inconvenience to:
    - the erroneously Switched Customer;
    - the Network Operators and Communications Providers involved in the Switch; and
    - the intended Switching Customer (if applicable).

## 1.5 References

Documents relevant to the UK Mobile Switching & Service Termination operation can be found at the OSG Website: www.mnposg.org.uk.

# 2 CONSUMER SWITCHING PROCESS

## 2.1 Business Rules

This section sets out Business Rules for consumer Switching of MSISDNs between Network Operators (NOs) and/or CPs using the PAC process, and Terminating services using the STAC process, and requesting Switching Information.

These Rules are owned by the OSG, and may be subject to addition or change by the OSG under a control procedure (set out in Appendix E), as a result of:

- improvements to process dynamics identified by the OSG
- commercial issues identified by the OSG
- changes to applicable regulations or laws

A more comprehensive description of the Switching and Termination Process is set out in Section 2.2.

The Switching and Service Termination Business Rules are:

1. Where possible the same processes shall be employed for:
    a. Migration of MSISDNs between SPs where the NO does not change
    b. Switching of MSISDNs between SPs where the NO also changes
    c. Service Termination via the STAC process
2. CPs can choose to use the process set out in these Rules, or their own internal process, to transfer MSISDNs between accounts where the SP does not change.
3. The Switching and Termination process shall use the CSS subject to SP agreement (see CSS Document Reference 11 in the mnposg.org.uk Related Documentation library).
4. Switching or Termination cannot be initiated without prior Authorisation by the DSP. Authorisation shall be acquired by a Customer request to the DSP. (Detailed requirements about the request process, including the methods which must be available to a Customer for making such requests, are set out in the Switching and Termination Process description (section 2.2 below)).
5. Authorisation to Switch or Terminate is confirmed by the DSP issuing an Authorisation Code (PAC or STAC) to the Customer. This Code constitutes agreement by the DSP that the Customer is entitled to Switch their MSISDN(s), or to use the Service Termination process to Terminate their account. (Detailed requirements for DSP provision of Authorisation Codes, including required methods of provision and timing, and how these vary for Residential and Business customers, are set out in the Switching and Termination Process description).

6. The DSP may only refuse to provide the Customer with an Authorisation Code in the following circumstances[2]:
   a. The MSISDN is not held by a Customer of the DSP.
   b. The MSISDN has been Terminated.[3]
   c. The Account Holder is deceased.
   d. The DSP has already issued a PAC or STAC that is still valid. (This reason does not apply where the Customer is requesting Switching Information).
   e. The Customer fails to provide adequate identification that he or she is authorised by the Account Holder to request an Authorisation Code.
   f. The account for which the PAC or STAC is requested has been suspended for fraud, or fraud has been or is being committed on the account, or the provider reasonably suspects this to be the case.

   Matters relating to unpaid debt on the part of the Customer may **not** be used as grounds to refuse the issuing of a PAC or STAC.
7. DSPs shall supply an Authorisation Code in response to a Customer request (by SMS, Online, or Phone), and RSPs shall accept Authorisation Codes presented by Customers. There is no limit to the number of PACs or STACs that RSPs may process on behalf of each Customer. This Rule is subject to each CP's policies for safeguarding against process misuse and fraud[4].
8. The RSP must advise Prepay Customers requesting to Switch that any outstanding credit they have is subject to 'use or lose'.
9. The DSP must provide all Switching Information to the Customer on request or together with a PAC or STAC. (Detailed requirements for provision of Switching Information are set out in the Switching and Termination Process description).
10. The Authorisation Code is valid until 18.00hrs on the 30th calendar day after issue by the CSS, including bank holidays (the "Validity Period").
11. During the Authorisation Code Validity Period, the DSP may take steps (including barring use of service) to manage outstanding debt prior to the MSISDN being Switched or the account Terminated. Outstanding debt is not a legitimate reason for a DSP to refuse to issue an Authorisation Code or avoid its other obligations as set out in these Rules.
12. The default Switch Date is the next Working Day following submission of the Switch-out request to the DSP by the RSP. Working Days are defined as 09:00-18:00hrs hours, Monday - Friday, excluding local bank holidays and industry-agreed non-working days.

[2] As set out in Ofcom letter to OSG dated 19 March 2019
[3] As soon as the account has been closed the MSISDN is ceased and is made 'non-active', ready for potential Repatriation after Quarantine. Different operators/SPs may have slightly different internal systems/procedures for this.
[4] The RSP and Customer should have agreed the type of service before the PAC/STAC is Redeemed, so as to not cause problems if the 'non-Customer' goes to another SP.

13. The Customer may request a Switch Date later than the default Switch Date, provided it is no later than the Working Day following the end of the Authorisation Code Validity Period. (See also Business Rules 16 and 26 below).
14. The Authorisation Code shall consist of three letters and six digits (for PACs the letters precede the digits, for STACs the digits precede the letters). The letters uniquely identify the DSP, and the digits uniquely identify the individual Switch-out request.
15. The OSG will maintain the three-letter SP identifier codes. Any request to add a new SP code, or to change or delete an existing SP code (e.g. arising from a change in SP name or merger of SPs) must be made to the OSG using the change control procedures.
16. Once an issued Authorisation Code has expired, it will be 'cleansed' from the CSS. After this time the same numerical digits may be re-used to generate a subsequent Authorisation Code.
17. A DSP may issue one Authorisation Code for each Primary or Secondary MSISDN held by an Account Holder, up to a maximum of 24 MSISDNs. Alternatively, a single Authorisation Code may be issued for up to 24 MSISDNs within a single request.
18. Once a valid Switch-out or Termination request has been submitted to the CSS, both the DSP and RSP must action the request. (Detailed requirements for DSP and RSP actions to process Switching and Termination requests, are set out in the Porting and Termination Process descriptions).
19. If Secondary MSISDNs are not Switched at the same time as Primary MSISDNs, services on the Secondary MSISDNs may be lost. Each SP is free to apply its own Business Rules to continue or Terminate service on a Secondary MSISDN at the Customer's request after its Primary MSISDN is Terminated or Switched-out.
20. The Customer's request to the DSP for Authorisation to Switch or Terminate does not in itself represent a request to Terminate service with the DSP. The DSP should not, therefore, disconnect the MSISDN unless the PAC or STAC is subsequently Redeemed, at which point it should follow the Switching or Service Termination processes set out in these Business Rules. For the avoidance of doubt, Customers may request to Terminate their service without using a STAC, in which case they must follow the DSPs standard Termination procedures.
21. The Customer's request to the DSP for Authorisation to Switch or Terminate service will revoke any previous request unless the Customer asks the original request to stand and the DSP can accommodate this. On issuing an Authorisation Code, the DSP must inform the Customer:
    a. if any previous Termination or Switch request has been revoked, and any current or pending internal Termination actions are being Cancelled;
    b. if the account will continue and any notice to Terminate will be lost if the Authorisation Code is not used within its 30-day validity window;

c. if the account will Terminate before the Authorisation Code Validity Period expires as a result of the Customer requesting the previous notice to remain in effect, and on which date it will Terminate;
d. the date which will be used to calculate any outstanding subscription charges owed under the contract.

22. DSPs can action Customer requests to rescind Authorisation at any time prior to submission of a Switch-out request by an RSP, by Cancelling the relevant Authorisation Code on the CSS. This will prevent submission of subsequent Switch-out requests by other SPs.
23. The Customer may also request that the RSP Cancels or amends the Switch request at any time up to the point where the DSP has 'read' the request data submitted by the RSP to the CSS and stored in the Switching Report. The Customer may not ask for the Switch Date to be brought forward, but may ask for it to be put back, subject to the constraints described in Business Rule 12.
24. For any Switching or Service Termination request, the Customer's notice period (i.e. the date at which the service discontinues for the purposes of calculating any contractual outstanding subscription charges) shall end at the end of the day when the Switch or Service Termination takes place.
25. A valid Switch-out or Termination request from the RSP represents a notice to Switch or Terminate the current service on the DSP for the MSISDN(s) on the Switch Date.
26. If the Authorisation Code Validity Period passes without submission of a Switch-out or Termination request, the DSP must not Terminate the Current Subscription, unless requested to do so by the Customer.
27. The DSP shall ensure that Switch-out requests submitted by the RSP to the CSS are processed so as to Switch out the requested MSISDNs to the specified RNO(s) on the Switch Date according to the Switching process and timelines defined in Appendix A.
28. The RSP shall ensure that a subscription is active on the specified RNO on the Switch Date for each Switching MSISDN, according to the agreed Switch Date timeline (Figure 1).
29. The RSP shall inform the Switching Customer of the terms and conditions which apply for Terminating an account where the Customer purchases a service for a trial period.
30. If the Switching-in Customer elects to discontinue service with the RSP within a trial period and wishes to Switch out the MSISDN(s) to another NO and/or CP, the Customer must request and submit an Authorisation Code before the trial period ends. DSPs should ensure that charging for equipment does not disincentivise or discourage the Customer from Switching.

## 2.2 Switching and Service Termination Process Descriptions

The consumer Switching and Termination process comprises the steps set out below. The process applies to both business and residential consumers for up to and including 24

MSISDNs. It follows the requirements of Ofcom General Conditions B3 and C7[5]. However, the process description does not constitute legal or regulatory compliance advice.

The process description incorporates the responsibilities of all parties to the Switching or Service Termination transaction, i.e. the Account Holder or authorised user (business and residential Customers), the DSP, the RSP, the DNO, the RNO, and the ONO.

## 1 Customer contacts DSP to obtain Authorisation to Switch or Terminate service

The Customer initially contacts the DSP to request Switching Information or Authorisation to Switch or Terminate service. The Customer may be either the authorised user or Account Holder of the Switching or Terminating MSISDN(s), according to the rules of each SP.

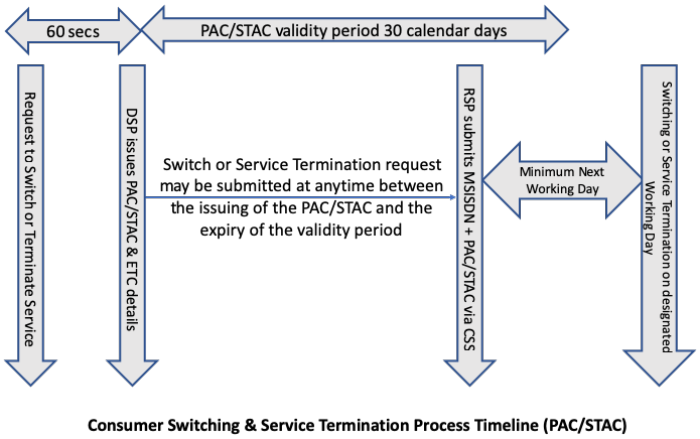



*Figure 1: Consumer Switching & Service Termination Process Timeline*

The DSP must accept Customer requests for Switching Information Authorisation Codes:

- At all times by SMS where the request is for 1 number only.
- At all times via an online account where the request is for up to 24 numbers.
- On any Working Day by phone where the request is for up to 24 numbers.

## 2 DSP authorises Switch or Service Termination

The DSP validates the Customer's identity. The DSP shall then either:

- Request an Authorisation Code from the CSS and provide this to the Customer;
- Provide Switching Information to the Customer; or
- Offer one of the reasons set out in rule 6 in section 2.1 as to why provision of Switching Information or an Authorisation Code has been refused.

If a Customer request for Switching or Service Termination Authorisation is refused, the DSP must immediately confirm the rejection by the method used to request the Authorisation

[5] https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/general-conditions-of-entitlement

Code initially plus send a SMS, if that method had not been used, to the Customer's MSISDN.

**a) DSP provides Switching or Service Termination Authorisation Code to Customer**

The DSP issues the Customer with a unique Authorisation Code for the MSISDN(s) to be Switched or Terminated, and the information specified in Step 2b below.

The same Authorisation Code may be associated with up to 24 MSISDNs for the same Customer. The authentication of an individual Switching request is the combination of the MSISDN and its associated Authorisation Code (hereafter referred to as the "Authorisation Code/MSISDN pairing").

For requests from a residential Customer, the DSP must provide the Authorisation Code via the same channel through which the request was made, and, for requests for a single MSISDN made by phone/online, also by SMS. Codes must be provided within one minute of receiving the request, except that, for phone requests, the required SMS may be sent up to one minute from the end of the call.

For requests from a business Customer, the DSP must provide the Authorisation Code:

- For requests made by SMS, by SMS within two working days.
- For requests made online, via online account, and, if the request relates to a single MSISDN, also by SMS, within two working days.
- For phone requests:
    - for single MSISDNs, during the call if possible, or, if not, by SMS within two hours from the end of the request call;
    - for 2-24 MSISDNs, by phone call within two hours from the end of the request call.

**b) DSP provides mandatory Switching Information to Customer**

Communication to the Customer of the Authorisation Code shall include the Switching Information required by Ofcom[6]. This information can be separately requested, without also requesting an Authorisation Code, using the short code 85075. Switching Information must be provided to Customers at no cost.

For Customers who request an Authorisation Code, Switching Information must be provided at the same time and through the same channel as the Authorisation Code.

For requests for Switching Information only from a residential Customer, the DSP must provide the Information via the same channel through which the request was made, and, for requests for a single MSISDN made by phone/online, also by SMS. Information must be

[6] https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/general-conditions-of-entitlement

provided within one minute of receiving the request, except that, for phone requests, the required SMS may be sent up to one minute from the end of the call.

For requests for Switching Information only from a business Customer, the DSP must provide the Information within two working days via online account, or, if the request relates to just one MSISDN, by SMS.

Regulatory requirements for provision of PACs, STACs and consumer information are summarised in the table below.

| BUSINESS AND RESIDENTIAL CUSTOMERS | | | RESIDENTIAL CUSTOMERS PAC/STAC/INFO | | BUSINESS CUSTOMERS PAC/STAC/INFO | |
|---|---|---|---|---|---|---|
| **Request route** | **How many numbers?** | **Route Availability** | **Provide route** | **Provide time** | **Provide route** | **Provide time** |
| **SMS** | 1 | At all times | SMS | 1 min from receipt | **PAC/STAC**: SMS<br>**INFO**: SMS OR Online | < 2 Working Days<br>< 2 Working Days |
| | 2 -24 | At all times for INFO only[7] | SMS INFO only | 1 min from receipt | **PAC/STAC**: N/A<br>**INFO**: Online | N/A<br>< 2 Working Days |
| **Online account** | 1 | At all times | Online & SMS | 1 min from receipt | **PAC/STAC**: Online AND SMS<br>**INFO**: SMS OR Online | < 2 Working Days<br>< 2 Working Days |
| | 2 -24 | At all times | Online only | 1 min from receipt | **PAC/STAC**: Online<br>**INFO**: Online | < 2 Working Days<br>< 2 Working Days |
| **Phone** | 1 | Working Days | Phone & SMS | 1 min from call end[8]<br>1 min from call end | **PAC/STAC**: Phone OR SMS<br>**INFO**: SMS OR Online | During call if poss, else SMS <2 hours from call end<br>< 2 Working Days |
| | 2 -24 | Working Days | Phone only | 1 min from receipt | **PAC/STAC**: Phone<br>**INFO**: Online | <2 hours from call end<br>< 2 Working Days |

*Table 1: How & when PAC/STAC/INFO can be requested from DSPs (GC C7)*

In addition, the DSP shall provide:

- Confirmation of the Authorisation Code Validity Period (start and expiry dates)
- Confirmation of the MSISDN(s) to which the Authorisation Code applies (max 24)
- Confirmation that service will be discontinued on the Switch Date for each MSISDN that receives a subsequent valid Switching or Service Termination request within the Validity Period
- Clarification of whether or not it is the DSP's policy to continue service (and subscription charges) for any Secondary MSISDNs that remain on the DSP account after the associated Primary MSISDN is Switched out
- Notification that the issue of the Authorisation Code is taken to revoke any previous Termination notice

[7] This is OSG's interpretation of GC7.23.

[8] For phone requests, Ofcom has not specified the point during the call from which the clock should start; we assume it is from the end of the call.

- Confirmation that service (and any associated subscription charges) will continue if no Switch-out request is received

**c) DSP requests Authorisation Code for the relevant MSISDN from the CSS**

Each entry shall include the following data:

- The MSISDN, its Primary/Secondary status, its DNO and its associated Authorisation Code
- The Primary MSISDN (for Secondary MSISDNs only)
- The Authorisation Code Validity Period

### 3 Customer requests Switch-in to RSP or Service Termination by DSP

The Customer selects an RSP and requests to Switch in their MSISDN(s) from their current Service Provider (the DSP) or Terminate service with their DSP. The Customer shall provide the RSP with:

- MSISDN(s) to be Terminated / included with the Switch;
- The requested date for the Termination / Switch; and
- Authorisation Code(s) (STAC/PAC) for each MSISDN

The RSP cannot proceed with the request if the Customer does not have a valid Authorisation Code. RSPs should refer Customers without a valid Code back to the DSP to request Authorisation to Switch out or Terminate.

### 4 RSP activates New Subscription

A Customer request to Switch or Terminate a service will often be made at the same time as they take out a New Subscription with an RSP. The RSP can activate the New Subscription in two ways:

- In-store: RSP gives the Customer a SIM linked to a temporary MSISDN (and possibly a new handset), and immediately activates the New Subscription on its network.
- Remotely (online or by phone): RSP sends a SIM linked to a temporary MSISDN (and possibly a new handset) by post, and activates the New Subscription either automatically when the Customer inserts the SIM into a handset and is Registered on the RSP network, or manually when the Customer confirms receipt by calling RSP Customer Service.

### 5 RSP submits Switch-out or Service Termination request to CSS

For in-store Switch-out or Service Termination requests, the RSP will enter the Authorisation Code/MSISDN via their sales system on to the CSS while the Customer is in-store. The CSS will either:

- Accept the Authorisation Code/MSISDN pairing and prompt the RSP to enter the Switching or Termination details (RNO, RSP, and Switch Date) for the MSISDN. (These details will then be stored in the CSS Switching Report files); or
- Reject the Authorisation Code/MSISDN pairing as invalid and return an error message to confirm the reason (see Section 2.4 below).

Once the CSS has accepted the Authorisation Code, the RSP can confirm to the Customer that the Switch will take place on the agreed Switch Date.

For remote requests:

- Where the Customer already has an active SIM, the RSP will enter the Authorisation Code/MSISDN pairing and Switching/ Termination details as soon as they receive the request.
- Where the RSP has posted a new SIM to the Customer, the RSP will pre-enter the details and then submit them later either manually when the Customer calls to notify that they have received the SIM, or automatically once the new SIM has Registered on its network.

NOTE: The SP must have processes in place to handle rejection of the Authorisation Code/MSISDN pairing so they can warn the Customer that the Switch cannot go ahead as planned.

At the request of the Account Holder, the RSP or the DSP can Cancel or amend the Switching details on the CSS during the Adjustment Period. Where no Cancellation or amendment request is received, the Authorisation Code will automatically be Locked at 20:30hrs on the Working Day prior to the Switch Date by the CSS.

## 6 DSP processes Switch requests

The CSS functional specification Ref 11, Section 1.5 for operational details may be found on the mnposg.org.uk website in the Related Documentation library section.

Daily, the DSP ‘polls’ the CSS Switching Report to identify MSISDNs for which Switch, and Service Termination requests have been received. The DSP shall read the given Authorisation Codes, and Auto-Lock them between 20:30-20:45hrs on the Working Day before the Switch Date. Until the Code is Locked, the RSP can Cancel or modify the request without input from the DSP.

Each DSP shall be free to process Switch requests (PAC & STAC) received from the CSS in a manner compatible with their internal Switching systems and operational processes.

## 7 Switch in MSISDN(s) on Switch Date

On or before the Switch Date[9] the RSP shall set up a New Subscription (using a temporary MSISDN) for the Switching MSISDN on the RNO to be active on the agreed Switching date. The RSP should ensure that the Switching Customer is in possession of an appropriate SIM and handset before the Switching date.

## 8 Switch out MSISDN(s) on Switch Date

- On or before the Switch Date[10] the DSP shall initiate the Switch out of the MSISDN from the DNO.
- The Switch-out processes shall ensure that, until the agreed Switch Date:
  - the Current Subscription remains active on the DNO, and
  - the Residual Subscription remains unchanged on the ONO
- DSP shall pass the following data to the DNO:
  - Switching MSISDN
  - RNO
  - Switch Date
- DNO proceeds with the Switch or Service Termination.
- For Switching-out MSISDNs:
  - Upon receipt of the Switch Date the DNO shall:
    - validate the MSISDN to confirm that it is supported by an active Current Subscription
    - notify the DSP of any invalid Switching MSISDNs
  - On the Switch Date, for valid MSISDNs, the DNO shall request the ONO to re-route incoming traffic to the MSISDN towards the RNO.
  - The DNO shall provide the ONO with the following Switching data:
    - switched MSISDN
    - RNO
    - Switch Date (for audit purposes only)
- For Service Termination MSISDNs:
  - Upon receipt of the Termination data the DNO shall:
    - validate the MSISDN; and
    - notify the DSP of any invalid Terminating MSISDNs

[9] The actual time at which the DSP performs this action will depend upon the specific functionality of the RSP and/or RNO systems. The RSP is free to initiate the Switch-out action before the Switch Date, if these systems have the capability to schedule ("diarise") the Switch-out action in advance, so as to take place on the Switch Date.

[10] The actual time at which the DSP performs this action will depend on the functionality of the DSP and/or DNO systems. The DSP is free to initiate the Switch-out action before the Switch Date if these systems have the capability to schedule ("diarise") the Switch-out action in advance, so as to take place on the Switch Date.

  - On the Service Termination date, for valid MSISDNs, the DNO shall place the MSISDN into Quarantine.

- ONO modifies Residual Subscription.
  - For Switching the ONO shall validate its 'ownership' of the Switching MSISDN and reject any re-route request submitted by a NO which is not the DNO for the Switching MSISDN.
  - For Switching and valid re-route requests, the ONO shall modify the Residual Subscription to re-route traffic to the RNO as requested and shall confirm the modification of the Residual Subscription to the DNO and the RNO.

- DNO completes Switch-across actions
  - Upon confirmation that the Residual Subscription has been modified, the DNO shall Terminate the Current Subscription for the Switching MSISDN before the end of the Switching day (i.e. no later than 23:59hrs on the Switch Date).
  - NOTE: If the re-route request is rejected, the DNO/DSP shall investigate and rectify the erroneous data and re-submit the re-direction request.

Appendix A1 sets out the timeline for the actual Switching event (i.e. the transfer of the Switching MSISDN(s) across networks) and sets out the sequence of NO actions and the nature of the Switching “window”.

Appendix A2 sets out the timeline for Service Termination events.

## 2.3 Consumer Switching Process Flow

Figure 2 shows the process flow for Bulk Switching.

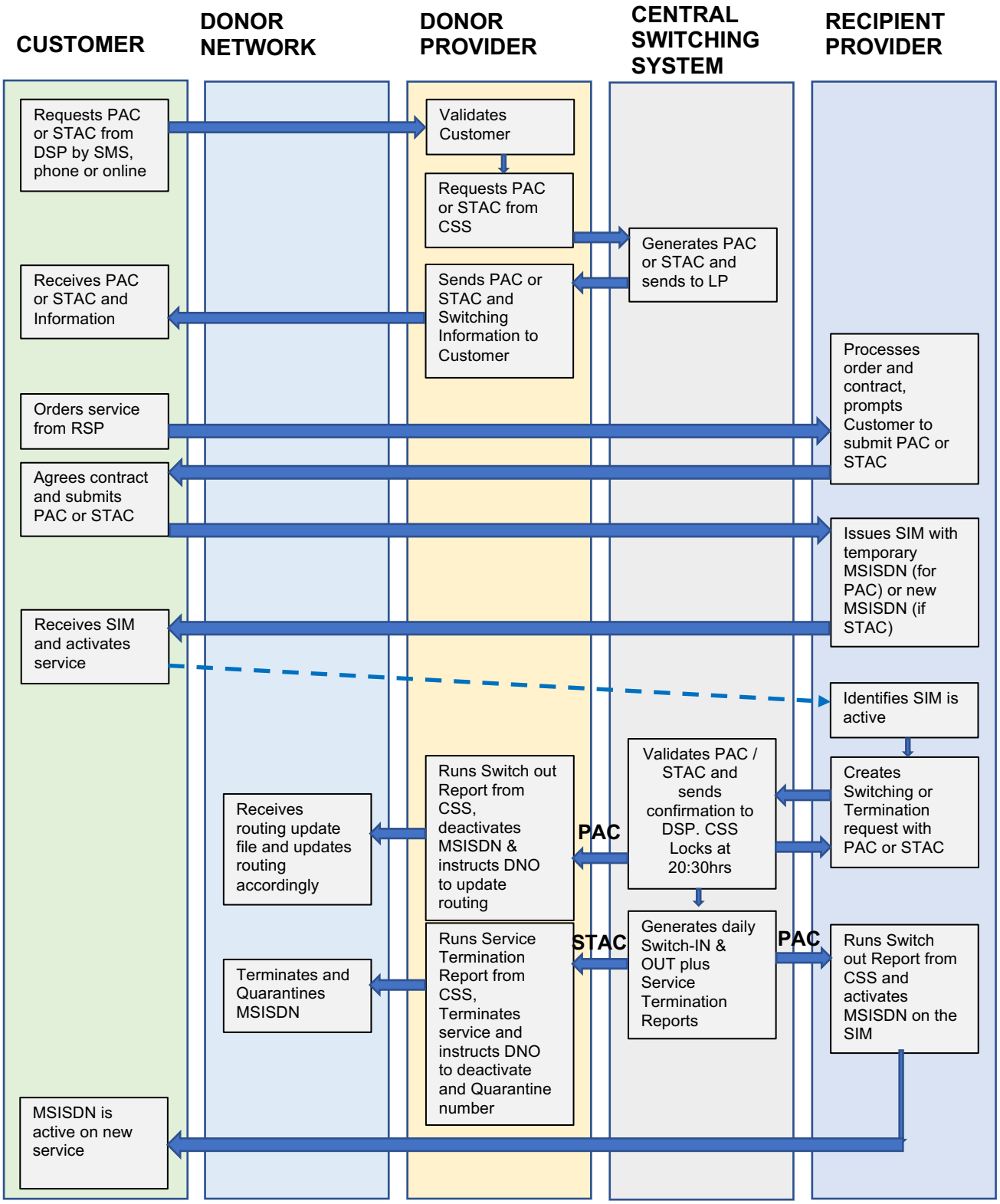



*Figure 2: Consumer Switching & Service Termination process flow*

## 2.4 Reasons Process May Not Complete

The CSS will not allow the Switching and Service Termination processes to complete if it receives an invalid Authorisation Code/MSISDN pairing. This can occur if the Authorisation Code is incorrect or does not match the MSISDN. For incorrect matches, the CSS may display one of the following messages:

- **Entry closed** - the access attempt has used an Authorisation Code/MSISDN pairing which matches an entry on the CSS, but the entry status = "Closed". This indicates that a valid Switch-out request for the MSISDN has already been submitted by another SP. The Customer cannot attempt to Switch in a MSISDN to more than one SP at the same time.
- **Expired Authorisation Code** - the access attempt has used an Authorisation Code/MSISDN pairing which matches a current entry on the CSS, but the attempt has been made after expiry of the Authorisation Code Validity Period. In this case the Customer will need to request another Authorisation Code from the DSP.
- **Entry Locked** - the access attempt has used an Authorisation Code/MSISDN pairing which matches an entry on the CSS, but the entry status = "Locked". This indicates that the DSP has Locked the Switch-out request in order to action the request. This means the RSP cannot amend the Switch request, and the Switch will take place as specified. In Exceptional (Technical) Circumstances, the RSP may contact the DSP resolution hotline to amend the Switch details in advance of the Switch Date. (See Section 6, Recovery Processes).
- **Entry Cancelled** - the access attempt has used an Authorisation Code/MSISDN pairing which matches an entry on the CSS, but the entry status = "Cancelled". This indicates that the Customer has previously requested the DSP to Cancel the Authorisation Code for the Switching MSISDN.

NOTE: If the RSP does not submit the Authorisation Code/MSISDN pairing in the presence of the Customer, they must have in place appropriate processes to inform the Customer that the Authorisation Code/MSISDN pairings has been rejected.

# 3 BULK SWITCHING PROCESS

## 3.1 Introduction

This section sets out rules for Switching more than 24 MSISDNs ('Bulk Switching') between Network Operators (NOs) and/or Service Providers[11]. Bulk Terminations using the STAC process are not permitted. The separation of processes into Bulk and Consumer recognises the additional work required by the DSP to process volume requests.

These rules are owned by the OSG and may be subject to addition or change by the OSG, under a control procedure set out in Appendix E, as a result of:

- improvements to process dynamics identified by the OSG
- commercial issues identified by the OSG
- changes to applicable regulations or laws

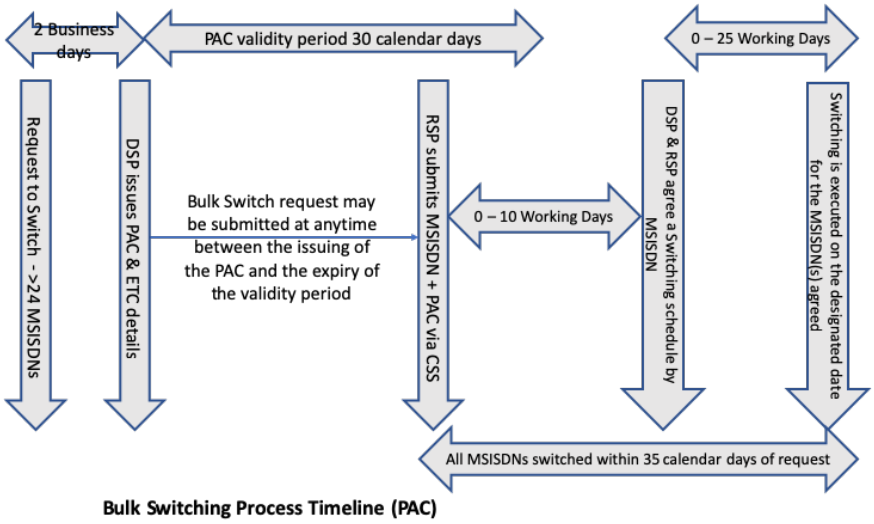



*Figure 2: Bulk Switching Process Timeline*

## 3.2 Bulk Switching Rules

1. Where possible the same processes shall be employed for:
   - Migration of MSISDNs between SPs where the NO does not change
   - Switching of MSISDNs between SPs where the NO changes
2. CPs can choose to use the process set out in these Rules, or their own internal process, to transfer MSISDNs between accounts where the SP does not change.
3. The CSS will be used for inter-SP communication related to Switching requests.
4. The Switching process cannot be initiated without Authorisation by the DSP. Such Authorisation may only be withheld for reasons set out in paragraph 6 of section 2.1.

[11] The Bulk Switching process is not regulated by Ofcom.

5. Authorisation to Switch is confirmed by the DSP issuing an Authorisation Code (PAC) to the Customer. This code constitutes agreement by the DSP that the Customer is entitled to Switch their MSISDN(s) to another SP and/or Network. The DSP shall register this Authorisation Code against the MSISDN(s) authorised for Switching.
    - A maximum of 1,000 MSISDNs may be linked to a single Authorisation Code
    - The CSS GUI includes the ability to create and submit a .CSV file for each Authorisation Code/MSISDN(s) group (see Appendix B)
6. The RSP must advise Prepay Customers requesting to Switch that any existing credit they have is subject to 'use or lose'.
7. The Authorisation Code is valid until 18.00hrs on the 30th calendar day from issue by the DSP, including bank holidays (the "Validity Period"). A Switch-out request submitted by the RSP to the CSS by the end of the Validity Period must be actioned by the DSP, and the Switch must take place on the next Working Day.
8. During the Authorisation Code Validity Period, the DSP may take steps (including barring use of service) to manage outstanding debt prior to the MSISDN being Switched. Outstanding debt is not a legitimate reason for a DSP to refuse to issue an Authorisation Code or avoid its other obligations as set out in this manual.
9. The Switch Date for each Switching MSISDN shall be specified within a schedule drawn up by the Customer and the RSP. This date shall be entered into the CSS by the RSP.
10. The DSP is entitled to negotiate with the RSP and Customer to agree an alternative schedule but must be able to support a Switch on the next Working Day where so requested. The RSP should update any amendment to the Switch Date on the CSS.
11. Each MSISDN may be Switched out from the Working Day after the entry is closed until the Working Day after the last day of the Authorisation Code Validity Period.
12. Switching shall only take place on a Working Day. If the derived Switch Date is a bank holiday, the Switch will take place on the next Working Day. Working Days are defined as 09.00-18.00hrs, Monday - Friday, excluding local bank holidays.
13. The PAC Authorisation Code shall consist of 3 letters followed by six digits. The letters uniquely identify the DSP and the digits uniquely identify the Switch-out request. The OSG will maintain the SP identifier codes.
    - NOTE: Requests to add a new SP code, or to change or delete an existing SP code (e.g. following a change in SP name or a merger of SPs) must be made to the OSG Production Manager (info@mnposg.org.uk).
14. A Bulk Switch-out request is identified by the pairing of the Authorisation Code and up to 1,000 MSISDNs.
    - NOTE: Once an issued Authorisation Code has expired it will be "cleansed" from the CSS. After this time the same numerical digits may be re-used to generate a subsequent Authorisation Code.

15. DSPs may issue either a single Authorisation Code or multiple Authorisation Codes in response to requests to Switch multiple MSISDNs belonging to the same account. A maximum of 1,000 MSISDNs can be associated with a single Authorisation Code.
16. If the Customer contacts the DSP by phone, the Authorisation Code must be issued immediately, and the 30-calendar day Validity Period starts. Confirmation of the Authorisation (or reason for its non-issue) may also be sent in writing.
17. If the Customer contacts the DSP by email or letter, the DSP may respond with the written Authorisation, or reason for its non-issue as set out in paragraph 6 of section 2.1, within 2 Working Days of receipt of the Customer's request. If an Authorisation Code is issued, the 30-calendar day Validity Period will start from the time the Authorisation Code is generated by the CSS.
18. A written response to the Authorisation request must clearly indicate the Authorisation Code(s), the Authorisation Code Validity Period, and the MSISDN(s) to which the Authorisation Code applies. If Authorisation is refused for any MSISDNs, these must be clearly distinguished, together with the refusal reason(s) as set out in section 2.1 paragraph 6 of this document, for each MSISDN.
19. Customers must have a valid Authorisation Code for each MSISDN they wish to Switch.
20. Once a valid Switch-out request has been successfully submitted to the CSS there is an obligation on both the DSP and RSP to action the Switch.
21. Where Secondary MSISDNs are not Switched at the same time as the Primary MSISDN with which they are associated, DSPs can decide whether or not to continue providing service or to Terminate services on the Secondary MSISDN following the Switch.
22. The Customer's request to the DSP for an Authorisation to Switch does not in itself represent a request to Terminate service with the DSP. The DSP should not, therefore, disconnect the MSISDN upon request for (or issue of) an Authorisation Code.
23. An Authorisation Code request will revoke any previous notice to Switch, unless the Customer requests otherwise and the DSP can accommodate this request. On issuing an Authorisation Code, the DSP must inform the Customer:
    - if any previous Termination has been revoked, and any current or pending Termination actions are being Cancelled;
    - if the account will continue and any notice to Terminate will be lost if the Authorisation Code is not used within its 30-day validity window;
    - if the account will Terminate before the Authorisation Code expires as a result of the Customer requesting the previous notice to remain in effect, and on which date it will Terminate;
    - the date which will be used to calculate any outstanding subscription charges owed under the contract.
24. DSPs can action Customer requests to rescind Authorisation at any time prior to submission of a Switch-out request by an RSP, by Cancelling the relevant Authorisation

Code on the CSS. This will prevent submission of subsequent Switch-out requests by other SPs.

25. The Customer may also request that the RSP Cancels or amends the Switch request at any time up to the point where the DSP has 'read' the request data submitted by the RSP to the CSS and stored in the Switching Report. The Customer may not ask for the Switch Date to be brought forward, but may ask for it to be put back, subject to the constraints described in rule 13.
26. For any Switch-out request, the Customer's notice period (i.e. the date at which notice the service discontinues for the purposes of calculating any outstanding contractual subscription charges) shall begin on the day the Switch takes place.
27. A valid Switch-out request from the RSP shall always represent a notice to Terminate the Current Subscription on the DSP for the Switching MSISDN(s) on the Switch Date.
28. If the Authorisation Code Validity Period passes without submission of a Switch-out request, the DSP must not Terminate the Current Subscription, unless requested to do so by the Customer.
29. The DSP shall ensure that Switch-out requests submitted by the RSP to the CSS are processed so as to Switch out the requested MSISDNs to the specified RNO(s) on the Switch Date according to the Switching process and timeline defined in Appendix A.
30. The RSP shall ensure that a subscription is active on the specified RNO on the Switch Date for each Switching-in MSISDN, according to the timeline defined in Appendix A.
31. The RSP shall inform the Switching Customer of the terms and conditions which apply for Terminating an account where the Customer purchases a Service for a trial period.

## 3.3 Bulk Switching Responsibilities

The following responsibilities fall on each party listed over the course of a Bulk Switch.

**Customer/Account Holder**

- Provide identification acceptable to the DSP for obtaining an Authorisation Code.
- Be a legitimate and authorised Customer of the DSP.
- Settle any subsidy received on any equipment associated with the MSISDN(s).
- Provide a valid Authorisation Code when requesting a Switch in to the RSP.
- Ensure they have a handset that will work on the RN.
- Ensure they inform the RSP of all MSISDNs to be Switched.
- Agree a schedule with the RSP for Switching the MSISDNs.

**DSP**

- Issue a written (email or letter) Authorisation Code to the Customer, or communicate the reason(s) why not, as set out in paragraph 6 of section 2.1.

- Confirm the Switching Authorisation on the CSS.
- Process Switch-out requests submitted by the RSP via the CSS.
- Agree and confirm a Switching schedule with the RSP.
- Perform Switch-out system actions, and Terminate the Current Subscription for the Switching MSISDN on the DNO, in accordance with the SLAs in Appendix A.
- Restore active subscription for a Switched MSISDN as part of the recovery process.

The CSS shall initiate Auto-Locking by 20:30hrs to ensure that all code/MSISDN pairings in the closed state and scheduled to be actioned on the next Working Day are Locked by 21:00hrs on the Working Day prior to the Switch Date.

**RSP**

- Submit the Switch-out request to the DSP via the CSS.
- Complete a Switch in for all Switch-out requests successfully submitted to the CSS.
- Advise the Customer of any reason why the Switch request is invalid.
- Set up a New Subscription for the Switching MSISDN to be active on the RNO on the Switch Date, and provide the Customer with a SIM and, if required, user equipment (e.g. handset).
- Draw up a proposed Switching schedule with the Customer.
- Liaise with the Customer and the DSP to agree the proposed Switching schedule.
- Change Switch Dates on the CSS if the Switching schedule is subsequently revised.

**DNO**

- Request modification of the Residual Subscription on the ONO.
- Deactivate, or make provision for the DSP to deactivate, the subscription of the Switching-out Customer on the Switch Date.

**ONO**

- Validate the DNO re-routing request and refuse any requests for MSISDNs not currently supported by the DNO.
- Modify the Residual Subscription for the Switching MSISDN to re-route incoming calls and SMS towards the RNO.
- Following a successful re-routing, acknowledge the Residual Subscription status to both the DNO and RNO.

**RNO**

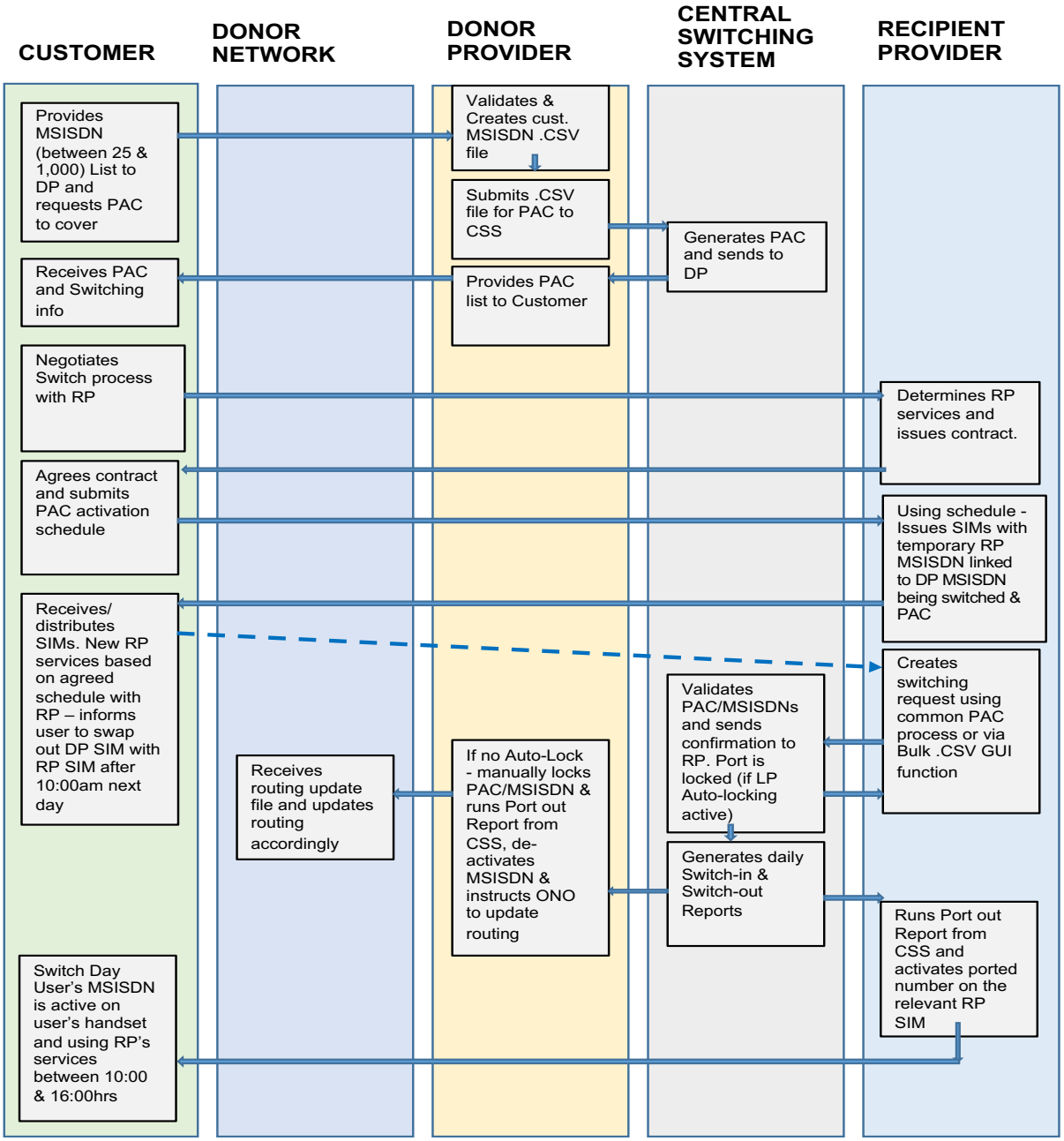
- Activate, or make provision for the RSP to activate, the subscription of the Switching-in Customer on the Switch Date

For the avoidance of doubt, failure to fulfil the responsibilities set out above does not affect a Customer's right to Switch their MSISDN.

## 3.4 Bulk Switching Process Flow

Figure 3 shows the process flow for Bulk Switching.

*Figure 3 Bulk Process Flow*



### *1. Customer contacts DSP to obtain Authorisation to Switch out*

The Customer initially contacts the DSP to request Authorisation to Switch out. The Customer may be either the authorised user or Account Holder of the Switching MSISDN(s), according to the rules of each CP.

- The DSP validates the Customer's identity, and then either:
  - Requests an Authorisation Code from the CSS and provides it to the Customer; or
  - offers one of the reasons out in Rule 6 section 2.1 as to why provision of an Authorisation Code has been refused.
- The DSP cannot refuse to issue an Authorisation Code if:
  - The Customer has not paid their final airtime bill (including notice period (not served), disconnection charges, or Switching charges) before the Switch Date.
  - The Customer has outstanding debt but is still connected (i.e. the MSISDN can receive a service) at the time the request is received.
- The DSP must inform the Account Holder of any outstanding subscription charges.
- If the Customer has requested to Switch by phone, and this is refused, the DSP may give reason(s) for the refusal during the call. Whether the request was made by phone or in writing, the DSP must send written confirmation of the reason(s) within 2 Working Days of receipt of the request.

### *2. DSP authorises Switch-out*

- The DSP issues the Customer with a unique Authorisation code for the MSISDN(s) to be Switched.
- The same Authorisation Code may be associated with up to 1,001 MSISDNs for the same Customer. The authentication of an individual Switching request is the combination of the MSISDN(s) and its associated Authorisation Code.
- The Customer may request an Authorisation Code through any channel acceptable to the DSP. Where the request is made by phone, the DSP may issue the Authorisation Code to the Customer during the call. However, the request is made, the DSP must despatch written confirmation of the Authorisation Code within 2 Working Days of receipt of the request.
- The DSP is entitled to insist on a written Switching Authorisation request with the Customer’s signature before issuing an Authorisation Code. The DSP shall explain to the Customer how to submit written Authorisation requests.
- The DSP should indicate any practical restrictions that apply when agreeing to the Switching schedule.

### *3. DSP provides mandatory information to Customer*

Confirmation of the Authorisation to Switch out shall include the following information:

- The Authorisation Code.
- Confirmation of the Authorisation Code Validity Period (start and expiry dates).
- Confirmation of the MSISDN(s) to which the Authorisation Code applies.
- Confirmation that service will be discontinued on the Switch Date for each MSISDN for which a subsequent Switch-out request is received within the Validity Period.
- Clarification of whether or not it is the DSP's policy to continue service (and subscription charges) for any Secondary MSISDNs that remain on the DSP account after the associated Primary MSISDN is Switched out.
- Notification that the issue of the Authorisation Code is taken to revoke any previous Termination notice.
- Confirmation that the service (and any associated subscription charges) will remain active if the Authorisation Code is not used, even if the Customer has previously given notice to Terminate.
- For the purpose of determining the Customer's obligations with regard to giving notice, confirmation that the contract Termination period is taken to commence on the date of issue of the Authorisation Code, or the date of any previous notice to Terminate, whichever is the earlier.

### *4. DSP registers Authorisation Code and MSISDN on the CSS*

- The DSP shall ensure that an entry is created on the CSS for each Switching MSISDN. Each entry shall include the following data:
  - The MSISDN, its Primary/Secondary status, its DNO and its associated Authorisation Code.
  - The Primary MSISDN (for Secondary MSISDNs only).
  - The Authorisation Code Validity Period.
- This information may be submitted using a .CSV file via the Bulk Switch function available on the CSS GUI. (See Appendix B for information).

### *5. Customer requests Switch in to RSP*

The Customer selects a new Service Provider (RSP) and Network Operator (RNO) and requests to Switch-in their MSISDN(s) from their current Service Provider (DSP).

- The RSP cannot proceed with the Switch-in request if the Customer does not have a valid Authorisation Code. In this case the Customer should be referred to the DSP to request Authorisation to Switch out.
- The RSP is entitled to decline the Switch-in request - this is a commercial decision.

### *6. RSP submits Switch-out request to DSP*

If the RSP and Customer agree to continue with the Switch-in, the RSP shall submit the request to the DSP for each Switching MSISDN via the CSS.

- The RSP shall confirm the following mandatory information to the Switching Customer:
  - The Customer has entered into either a prepay or subscription agreement with the RSP to support service against the Switched MSISDN(s) on the Recipient Network.
  - If the Switching MSISDN is prepay the Customer must use any outstanding credits or risk losing them.
  - The RSP and Customer agree a proposed Switching schedule for all MSISDNs that are Switching out from the DSP (taking into account any practical restrictions indicated by the DSP).
- The Customer shall provide the RSP with the following Switching details:
  - Switching MSISDN(s)
  - Switch Authorisation Code valid for each MSISDN
  - RNO for each MSISDN
- The RSP shall enter the Authorisation Code/MSISDN pairing into the CSS.
  - Note: This information may be submitted using a .CSV file via the Bulk Switch function available on the CSS GUI. (See Appendix B for information).
- The CSS shall either:
  - Accept the Authorisation Code/MSISDN pairing and prompt the RSP to enter the Switching details (RNO, RSP, and Switch Date) for the MSISDN; or
  - Reject the Authorisation Code/MSISDN pairing as invalid and return an error message to confirm the reason.
- Using the Switching Report feature in the CSS, the DSP can view the Switching schedule and must do this no later than the Working Day before the Switch Date, without 'Locking' the Switching schedule for the MSISDN(s) in question.
- The DSP must negotiate a revised Switching schedule with the RSP if they are unable to meet the proposed schedule for operational reasons. In this case the RSP must agree a revised Switching schedule which is mutually acceptable to all parties. The RSP shall then update the Switch-out requests on the CSS to reflect the revised Switch Dates for all relevant MSISDNs.
- The RSP shall include a contact name for bulk requests submitted to the CSS.
- The RSP can Cancel or amend the Switching details on the CSS where requested by the Customer, at any point until the Switching schedule is confirmed by the DSP. Once the DSP has agreed the schedule and 'locked' the Switching details, RSP access to the CSS entry is 'denied'. Any amendment must then be actioned via the Unlocking Authorisation Codes exception conditions set out in Section 7.1.4 .

### *7. DSP processes Switch-out requests*

Daily, the DSP 'polls' the CSS Switching Report to identify MSISDNs which have been Redeemed and Closed by the RSP.

See also the CSS functional specification Ref 11, Section 1.5 for operational details which may be found on the mnposg.org.uk website in the Related Documentation library.

The CSS will Auto-Lock all requests between 20:30-20:45hrs on the Working Day before the Switch Date. After this point, the RSP cannot Cancel a request without input from the DSP. If the DSP elects to Lock before this time they must ensure they have support staff available up to 17:00 on the Working Day prior to the Switch in order to unlock entries should this be required following a Cancellation request from the Customer.

- The DSP can identify MSISDNs to be Switched in any of the following ways:
  - Identify MSISDNs to be Switched on the next Working Day. This allows the Switch details for each MSISDN to be read from the CSS and (manually) input into DSP Switching systems for immediate action after 10:00hrs on the Working Day.
  - Identify MSISDNs to be Switched X days from today. Similar to the option above but allows X days to manually process the data onto the DSP's internal systems.
  - Identify MSISDNs for all newly received Switch requests. This allows a DSP to process all new requests immediately following 10:00hrs on the Switch Day, and to exploit any internal system 'diarisation' capability to action the Switch on the specified Switch Date.

### *8. DSP reads Switch data from CSS*

- Each DSP can process Switch-out requests received via the CSS in the manner most compatible with their internal Switching systems and operational processes. They can transfer Switching details from the CSS onto their internal Switching systems in any of the following ways:
  - Read Switch details (or print a report) from the polled entries on the CSS web page, and manually enter the necessary data onto the internal Switching systems
  - Retrieve the Switch details for the polled entries on a common file format (e.g. ASCII) for direct data transfer into the internal Switching systems

### *9. Switch in MSISDN(s) on Switch Date*

- On or before the Switch[12] the RSP shall set up a New Subscription for the Switching MSISDN on the RNO to be active on the agreed Switching date.

[12] The actual time at which the RSP performs this action will depend upon the specific functionality of the RSP and/or RNO systems. The RSP is free to initiate the Switch-in before the Switch Date, if these systems have the capability to "diarise" the Switch-in action in advance so as to take place on the Switch Date as specified in the Switching event timeline in Appendix B.

- The RSP should ensure that the Switching Customer is in possession of an appropriate SIM and handset before the Switching date.

### *10. Switch out MSISDN(s) on Switch Date*

***DSP initiates Switch-out actions***

On or before the Switch Date the DSP shall initiate the Switch-out of the MSISDN from the DNO. The Switch-out processes shall ensure that, until the agreed Switch Date:

- the Current Subscription remains active on the DNO; and
- the Residual Subscription remains unchanged on the ONO.

The DSP shall pass the following data to the DNO:

- Switching MSISDN
- RNO
- Switch Date

***DNO proceeds with Switch***

Upon receipt of the Switch-out data (see 8.1, above) the DNO shall:

- validate the MSISDN to confirm that it is supported by an active Current Subscription
- notify the DSP of any invalid Switching MSISDNs

On the Switch Date, for valid Switching MSISDNs, the DNO shall request the ONO to re-route incoming traffic to the Switching MSISDN towards the RNO. The DNO shall provide the ONO with the following Switching data:

- MSISDN
- RNO
- Switching date (for audit purposes only)

***ONO modifies Residual Subscription***

The ONO shall validate 'ownership' of the Switching MSISDN and shall reject any re-route request submitted by a NO which is not the DNO for the Switching MSISDN.

For valid re-route requests, the ONO shall modify the Residual Subscription to re-route traffic to the RNO as requested and shall confirm this to the DNO and the RNO.

***DNO completes Switch-across actions***

Upon confirmation that the Residual Subscription has been modified, the DNO shall Terminate the Current Subscription for the Switching MSISDN before the end of the Switching day (i.e. no later than 23:59hrs on the Switch Date).

- If the re-route request is rejected, the DNO/DSP shall investigate and rectify the erroneous data and re-submit the re-direction request.

Appendix A2 sets out the timeline for the Switching event (i.e. the transfer of the Switching MSISDN(s) across networks) and clarifies the sequence of NO actions and the nature of the Switching 'window'.

## 3.5 Reasons Bulk Process May Not Complete

The Bulk Switch process will not complete if any of the steps set out above are not completed.

The Authorisation Code/MSISDN pairing may be rejected by the CSS for any of the following reasons:

- **Invalid Authorisation Code/MSISDN pairing** - the access attempt has used a pairing which does not match any current entry on the CSS. This indicates that either:
  - the Authorisation Code is incorrect, or
  - the Authorisation Code is not correctly matched with the MSISDN

  In this case the Customer should check that their Authorisation Code is valid and is matched with the correct MSISDN(s).
- **Entry Closed** - the access attempt has used an Authorisation Code/MSISDN pairing which matches an entry on the CSS, but the entry status = “Closed”. This indicates that a valid Switch-out request for the MSISDN has already been submitted by another SP. The Customer cannot attempt to Switch in a MSISDN to more than one SP at the same time.
- **Expired Authorisation Code** - the access attempt has used an Authorisation Code/MSISDN pairing which matches a current entry on the CSS, but the attempt is made after the Authorisation Code has expired. In this case the Customer will need to re-apply to the DSP for another Authorisation Code.
- **Entry Locked** - the access attempt has used an Authorisation Code/MSISDN pairing which matches an entry on the CSS, but the entry status = “Locked”. This indicates that the DSP has already read the Switch-out request from the web system in order to action the request, and RSP access to the entry has been Locked-out. In this case the RSP cannot amend the Switch request submitted to the DSP, and the Switch will take place as specified. In exceptional cases, the RSP may contact the DSP resolution hotline to amend the Switch details in advance of the Switch Date (see Section 6).

- **Entry Cancelled** - the access attempt has used an Authorisation Code/MSISDN pairing which matches an entry on the CSS, but the entry status = “Cancelled”. This indicates that the Customer has previously requested the DSP to Cancel the Authorisation Code for the MSISDN(s) in question.

# 4 MIGRATIONS PROCESS

The Migrations process **covers Switching from one SP to another SP, where both SPs are hosted on the same Network Operator:**

- Customer contacts DSP to obtain Authorisation to Switch out
- DSP authorises Switch and issues Authorisation Code
- Customer requests Switch in to RSP
- RSP submits Switch out request to DSP
- Valid Authorisation Code/MSISDN pairing
- DSP processes Switch out requests

The Migrations process **does not cover**:

- Communication between the SP and Network Operator as this is not required
- Network actions required to process the Migration. (These are subject to the individual operating requirements of each NO)

# 5 TERMINATION OF SERVICE

## 5.1 Reasons for Termination

There are two main reasons for Termination of service for a MSISDN:

1. Voluntary disconnection
    - The subscriber elects to end their contract with the current SP
2. Involuntary disconnection
    - The SP Terminates the service (e.g. for contract breach)
    - A pre-pay service expires after a period of disuse (if required by the SP).

## 5.2 Number Management after Termination

MSISDNs must be placed in Quarantine by the current SP/NO for 6 months after Termination. Quarantined numbers will receive no services. Calls to Quarantined numbers will receive an 'out of service' tone.

## 5.3 Possible Events after Termination

There are only two possible events post-disconnection:

1. Customer requests reactivation of number within Quarantine period. This can only succeed if the request is made to the SP that disconnected the number, and this SP is using the same NO as they did when the number was disconnected.
2. At the end of the Quarantine period MSISDN is Repatriated to ONO ready for re-allocation.

## 5.4 Process and Responsibilities

### 5.4.1 Termination

1. Current SP processes request for MSISDN Termination.
2. Current NO Terminates all services associated with the Terminated MSISDN.
3. Current NO places MSISDN in Quarantine for at least 6 months from Termination date.
4. ONO responsibilities remain the same:
    a) Maintains a record of the MSISDN and routing details to the current SP.
    b) Re-routes calls and SMS to MSISDN to the current NO.
5. Current NO Terminates calls to MSISDN with 'out of service' tone and drops SMS.

### 5.4.2 Re-activation

1. Current SP reactivates the service.

2. Current NO activates requested services on reactivated MSISDN:
3. ONO responsibilities remain the same
   a) Maintains active Residual Subscription for the Switched MSISDN
   b) Re-routes calls and SMS to MSISDN to the current NO

### 5.4.3 Repatriation

1. Current NO records the Termination date of the Switched MSISDN and notifies the ONO by transferring a PAT file the Working Day after expiry of the Quarantine Period.
2. Current NO prevents re-activation of the MSISDN on expiry of the Quarantine Period and ensures that the MSISDN is not available for re-allocation within its systems. Note: The current SP must also 'cleanse' the MSISDN on its own number management system before Repatriation.
3. ONO acknowledges Repatriation of MSISDN.
4. ONO Terminates Residual Subscription for Repatriated MSISDN and stops re-routing calls to the RNO, then returns a PAR file to the NO sending the PAT file within 10 Working Days of receiving the PAT file.
5. MSISDN is now under control of ONO to use as required.
6. Where a MSISDN has been Repatriated in error, the recipient of the PAT file must advise the sender of this as soon as possible. The sender must identify the correct ONO and submit a new PAT file to the ONO and await a PAR file from the correct ONO within 10 days.

### 5.4.4 Switching in Error (PAC only)

Where a MSISDN has been Switched in erroneously, the RSP network must:

1. Deactivate the service once the error has been discovered.
2. Ensure that a Repatriation process is not triggered at the end of the Quarantine period following the deactivation.

# 6 COMMUNICATIONS BETWEEN OPERATORS

All processing of personal data is subject to the six principles which underpin the General Data Protection Regulation. Operators must ensure that they comply with these principles.

Where Customer information is included in either the subject field or the body of any email sent between Service Providers and/or Network Operators, the email must be encrypted, with the de-encryption key sent separately.

# 7 RECOVERY PROCESSES

This section identifies Switching process problem scenarios and proposes suitable recovery mechanisms for their resolution. For each problem, one or more 'symptoms' are described to aid diagnosis (see Section 7.7). Each recovery mechanism indicates an appropriate resolution path and actions.

## 7.1 Switch and Service Termination Cancellation Process

When Cancelling a Switch or Service Termination request, the following process helps ensure a consistent Customer experience.

### *7.1.1 Process for the RSP*

In cases where the Customer requests Switch or Service Termination on the next Working Day, the RSP shall advise the Customer that they may not Cancel or amend the procedure after 17:00hrs on the day the request is submitted (i.e. once an Authorisation Code has been closed on the CSS), unless Exceptional Circumstances apply, as set out in section 7.1.5.

However, if the Customer requests a Switch or Service Termination date later than the next Working Day, the RSP shall advise that the Customer may Cancel the procedure up to 18:00hrs on the Working Day before the day of the Switch or Termination. For example, a Switch or Service Termination due to take place on a Friday may be Cancelled on the Thursday of that week.

To Cancel or amend a Switch or Service Termination which is 'closed', the RSP shall Cancel or amend the entry from their own system and the CSS, so that its status changes to 'open'. The RSP should contact the DSP and advise them of the change.

### *7.1.2 If the Authorisation Code is Locked*

To Cancel or amend a Switch or Service Termination which is Locked, the DSP shall UnLock the entry, so that its status becomes 'open'. (See section 7.1.4 for more details).

If an Unlock request is made by 18:00hrs on the Working Day before the Switch or Service Termination date, the DSP must carry out the request. If the request is made after this time, and there are Exceptional Circumstances (see section 7.1.5), then the escalation contacts of the DSP and RSP should discuss the matter and agree a way forward. If no agreement is reached, then the Switch or Service Termination shall proceed as originally planned.

If the Customer wishes to remain with the DSP and the Switch or Service Termination cannot be Cancelled, then the 14-day return regulations may apply if the purchase was made online, by phone, or by post. In this case, the RSP will need to re-issue a new Authorisation Code to the Customer so that they may Switch back to the original or another SP.

### *7.1.3 Change Switch Date*

If the Customer wishes to bring forward the date for either a Switch or a Service Termination, the RSP must follow the Cancellation process and then create a new entry with the revised Switch Date. If the Customer wishes to delay the Switch Date, the RSP can change it without first Cancelling, provided the new Switch Date is within the 30-day Code validity period.

### *7.1.4 Unlocking Authorisation Code codes*

To Unlock a Locked Switch or Service Termination entry, the RSP must mark it as Unlockable. The DSP may request the RSP to mark an entry Unlockable at any time prior to the Switch. The RSP must carry out the request if it is received before 18:00hrs on the Working Day prior to the Switch or Service Termination. The two providers will need to coordinate their activities to facilitate this.

**Example:**

A Customer decides to Cancel their Switch or Service Termination, which has already been Locked by the DSP, at 17:30 on the Working Day before the Switch or Service Termination. This request is made to the DSP, which then contacts the RSP to request that they mark the entry Unlockable. The RSP must execute the request, as it was made before 18:00hrs.

The RSP selects 'Unlock Entry' from the 'Main Menu' on the CSS and enters the MSISDN and Authorisation Code. At this stage the entry should be 'Locked'. The RSP then selects 'Mark Entry Unlockable'. The DSP should then be able to Unlock the entry in the normal way. This should result in the entry state being changed to 'Closed', to allow the entry to be Cancelled and deleted as necessary.

### *7.1.5 Exceptional Circumstances*

Requests made after 18:00hrs to Cancel a Switch or Service Termination scheduled to take place on the next Working Day, need only be executed (by Unlocking) when both (DSP & RSP) parties agree that Exceptional Circumstances exist. This only applies where the Switch or Termination is associated with fraudulent activity or has been made erroneously.

### *7.1.6 Switches or Service Terminations involving fraud or errors*

Switch or Service Terminations that have taken place as a result of fraudulent activity may be reversed where either the DSP or RSP identifies that the fraud has occurred or that the Switch or Termination has been made erroneously. Requests for the reversal of Switch or Service Terminations may not be unreasonably withheld. Following a request to reverse a Switch or Service Termination, the SP receiving the request must make all reasonable efforts to do this in the shortest time possible. Where the fraud is identified before the Switch or Service Termination has occurred the reversal request shall be treated in the same way.

### *7.1.7 Reversal of fraudulent or erroneous Switch or Service Terminations*

Where a Switch is identified as fraudulent or erroneous and needs to be reversed, the standard Switch process is used; i.e. a new Authorisation Code/MISDN pairing is created, then the entry is Closed, then Locked, before it is Switched back to the correct network or Terminated.

Where a Service Termination needs to be reversed, the DSP which Terminated the service must reactivate the service with the same MSISDN.

RSP and DSP may agree to manually reverse the Switch or Termination prior to the formal process taking place, provided that the associated entry is also Closed and Locked (This can take place after the manual reversal).

For PAC Switches, an REQ file must be sent as part of the Switch request as per the standard process. This is to ensure consistency of data across networks and to track ownership of numbers in cases involving fraud.

In the case of a fraudulent or erroneous port, to avoid traffic reaching the fraudulent or incorrect party, the SP which is returning the MSISDN to the original SP may decide to Cancel the MSISDN on their system.

## 7.2 Fault Reporting Process

The Switch and Service Termination rules set out in this document should result in an efficient and effective process. Where disputes arise in interpreting these rules, or where providers fail to adhere to the rules, the following Fault Reporting Process shall be followed in the order presented, in an attempt to resolve the dispute.

1. Switch or Service Termination issues should be reported after 16:00hrs on the scheduled execution day, unless an SP or NO identifies a significant deviation from normal activities which requires urgent attention.
2. Once reported, the recipient of the report must do at least one of the following:
    I. Log and Acknowledge the escalation within 4 business hours.
    II. Resolve the Switch or Service Termination issue within 24 hours.
3. Providers that regularly have an unacceptably high percentage of failed Switch or Service Terminations may be escalated to the ORG.
4. If the matter is not resolved at the ORG then it may be escalated to the OSG.

The OSG, and individual OSG members, can raise concerns directly to Ofcom, which may, at its discretion, seek to resolve disputes or enforce compliance with the General Conditions of Entitlement.

## 7.3 Recording of Delayed Switch or Service Terminations

Where an SP regularly fails to complete Switch or Service Terminations successfully, the number of failures and the length of time (in days) they have been outstanding should be recorded by the affected SPs. These statistics may be presented at any stage of the Escalation Process, to the associated OSG member.

## 7.4 Communications

Where a Switch or Service Termination process is interrupted, and an SP cannot adhere to the process set out in this document, they must communicate this immediately to the other SP, along with any information about when the problem might be resolved. Communication should be via email, using the MNP Nominated contact and Switching Escalation contact from the bottom of the CSS Contacts page.

## 7.5 Email Fault Reporting and Escalation Process

Where an issue has been reported and a response is still outstanding after 24 hours, the original fault report email should be forwarded to the DSP management escalation contact found on the CSS contacts section for the DSP concerned, with the MNP Nominated Contact on CC.

- Stage 1
    - When escalation is needed to chase outstanding files, the DNO/DSP must be contacted in the first instance via email. Operators should use the fault reporting template in Appendix C for consistency.
    - This template may be used to report multiple issues that have occurred on the same day. A new template must be completed for any issue reported after this day. If there are multiple DNOs an email notification must be sent to each individual DNO.
    - To find the relevant DNO email fault reporting contact, access the CSS platform and select menu choice Contacts.

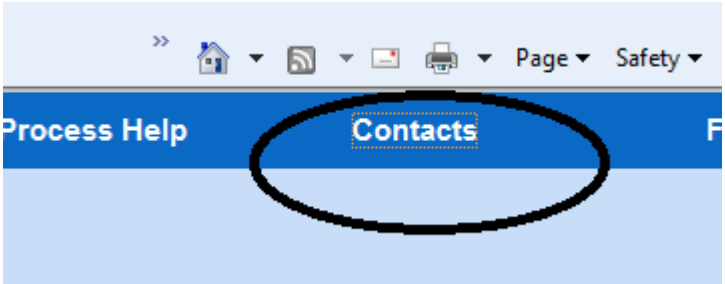



*Figure 4: CSS Contacts access*

    - Select PAC to view and find the relevant DNO network email address. The following screen will be displayed:

| | |
|---|---|
| O2 Network | BT |
| One.Tel | OTE |
| Opal Telecom | OEO |
| Orange PCS | OR |
| Orange SP | ORG |
| Ovivo Mobile | OVI |
| Personal Group Mobile | SHE |
| Plan Communications | PLN |
| Production Manager | ZLO |
| QiComm | QIC |

*Figure 5: Selection of correct DNO using PAC or STAC code*

- The full list of contacts within the specific DNO will be displayed (see below):

**Service Provider Details** last updated: 02-Jun-2019

**Public Notes (Initial point of contact for all porting enquiries)**

This SP is used by Syniverse for testing purposes.

**MNP Nominated Contact**

Person nominated to be the primary contact for communications between this SP and the Syniverse MNP Help Desk.

| | |
|---|---|
| Name | MNP Support |
| Postal Address | Syniverse Technologies 120 Moorgate London EC2M 6UR UK |
| Telephone | 0207 920 2298 |
| Fax | 0207 920 2201 |
| Email | mnpsupport@syniverse.com |

**Secondary MNP Nominated Contact (Optional)**

Person nominated to be the secondary contact (optional) for communications between this SP and the Syniverse MNP Help Desk.

Name
Postal Address
Telephone
Fax
Email

**Third MNP Nominated Contact (Optional)**

Person nominated to be the third contact (optional) for communications between this SP and the Syniverse MNP Help Desk.

Name
Postal Address
Telephone
Fax
Email

**Fourth MNP Nominated Contact (Optional)**

Person nominated to be the fourth contact (optional) for communications between this SP and the Syniverse MNP Help Desk.

Name
Postal Address
Telephone
Fax
Email

*Figure 6: CSS Operator Contact list (example)*[13]

- Fault reporting emails must only be sent to the Switching Nominated Contact found under the PAC code in the CSS. E.G:
  - GGF (Giff Gaff), would be reported to Giff Gaff email address and not 02;
  - VRG PAC, would be reported to Virgin and not to T-Mobile (EE).

- Stage 2 – At the DNO/DSP
  - Once an email is received and an REQ has been sent to the ONO, but the DNO/DSP is still awaiting the RSP, reply to the email and copy the ONO, advising

[13] To prevent any potential delay, it is vital that contact details are regularly updated.

all parties that an REQ has already been sent and if possible, add the REQ file reference.

  - If the RSP has been received and the relevant MSISDNs have been fully released from the current network, confirm this status but do not copy in the ONO as this should be dealt with by Recipient Network.

- Stage 3
  - If after 24 hours no response has been received and the RSP is still outstanding, a follow-up email is to be sent to the ONO advising any REQs (if ONO has not already been copied in).
  - If receiving response from the DNO/DSP and the ONO has not been copied in, then the email should be forwarded to the ONO in the first instance.

## 7.6 Switch or Service Termination Process Problem and Resolution Scenarios

| Problem Scenario [14] | Symptom | Resolution Path | Resolution Action |
|---|---|---|---|
| 1. RSP performs standard connection instead of Switch-IN request | Customer calls Dealer/RSP when bill arrives for new MSISDN Dealer calls RSP to correct erroneous connection for new MSISDN | Out of scope | Internal procedure between Dealer and RSP |
| 2. RSP fails to receive Switch-IN request from Dealer | Customer calls RSP (at any time) but RSP has no record of request Dealer calls RSP (at any time) but RSP has no record of request<br>Customer/Dealer calls DSP (at any time) but DSP has no record of RSP Switch or Service Termination request<br>Customer's service continues with current provider | Out of scope | Internal procedure between Dealer and RSP |
| 4. RSP fails to submit Switch-OUT or Service Termination request to DSP | Same as 2 (above) | Out of scope | Internal - between RSP and Customer |
| 5. DSP fails to Lock Switch or Service Termination request | Port-out request on CSS does not go to 'locked' status by or before the Switch or Service Termination date See also 12 (below) | RSP calls DSP support team | DSP checks receipt of Switch or Service Termination RSP re-sends request (if necessary) DSP returns ACK on same day |
| 6. Dealer fails to notify RSP of Customer withdrawal | Customer receives RSP Welcome Letter Customer loses service on DNO (see also 34) | Customer queries with Dealer/RSP | RSP withdraws Switch or Service Termination request on CSS if status = "closed" |

[14] Note that all problem scenarios in which the ONO successfully performs an "incorrect Switch" - i.e. in which the Residual Subscription is modified incorrectly - will result in a system trigger for the inappropriate application of the Switching administration charges. These scenarios may arise from errors caused by the DSP, DNO, or ONO.

| Problem Scenario [14] | Symptom | Resolution Path | Resolution Action |
|---|---|---|---|
| | | | Same as 8 if Switch or Service Termination request status = "read" and before Switch or Service Termination date<br>Same as 34 if after Switch or Service Termination date |
| 7. RSP fails to receive Customer withdrawal | Same as 6 (above) | Same as 6 (above) | Same as 6 (above) |
| 8. RSP fails to notify DSP of withdrawal before DSP reads Switch or Service Termination request | Authorisation Code/MSISDN pairing rejected by CSS<br>Notification should be sent to Customer indicating pairing is incorrect | RSP calls DSP support team | RSP calls DSP resolution team to withdraw request |
| 9. RSP and DSP both agree need to Terminate Switch or Service Termination process (and/or suspend and re-start with new Switch or Service Termination date) | RSP or DSP notified of death of Customer<br>Other mutually agreed reason to Terminate process | RSP calls DSP support team, or DSP calls RSP support team | If agreed by both parties, RSP and DSP Cancel pending actions, RSP contacts Dealer and/or Customer |
| 10.RSP fails to action Switch or Service Termination | Customer can't make or receive calls on RNO Customer/Dealer is not issued new handset/SIM (Customer also won't receive bill from RSP) | Customer calls RSP Switch or Service Termination support team<br>Customer calls Dealer –<br>Dealer would contact RSP and feedback to Customer | RSP resolves immediately |
| 11.RNO fails to action Switch or Service Termination (i.e. RSP account active, but not active on RNO) | Customer can't make or receive calls on RNO (but will receive bill from RSP) | Customer calls RSP Switch or Service Termination support team Customer calls Dealer - Dealer would contact RSP and feedback to Customer | RSP resolves with RNO immediately |
| 12.DSP fails to action Switch or Service Termination | Customer can make but can't receive calls on RNO<br>Customer receives bill from RSP and DSP! | Customer calls RSP Switch or Service Termination support team<br>Customer calls Dealer - Dealer would contact RSP and feedback to Customer<br>Customer calls DSP - DSP refers Customer to RSP | RSP calls DSP resolution hotline - DSP resolves on same day |
| 13.DNO fails to action Switch or Service Termination (i.e. DSP account closed, but still active on DNO) | Customer can't make or receive calls on RNO - can make but not receive calls on RNO | Customer calls RSP Switch or Service Termination support team | RSP calls DSP resolution team - DSP resolves with DNO immediately |

| Problem Scenario [14] | Symptom | Resolution Path | Resolution Action |
|---|---|---|---|
| | Customer receives bill from RSP but not from DSP | Customer calls Dealer - Dealer would contact RSP and feedback to Customer<br>Customer calls DSP - DSP refers Customer to RSP | |
| 14.Both RSP and DSP fail to action Switch or Service Termination | Customer can't make or receive calls on RNO - can still make and receive calls on DNO<br>Customer/Dealer is not issued new handset/SIM (Customer also won't receive bill from RSP) | Customer calls RSP Switch or Service Termination support team<br>Customer calls Dealer - Dealer would contact RSP and feedback to Customer<br>Customer calls DSP - DSP refers Customer to RSP | RSP resolves immediately and calls DSP resolution team - DSP resolves on same day |
| 15.Both RNO and DNO fail to action Switch or Service Termination (i.e. DSP account closed, but still active on DNO and RSP account active, but not active on RNO) | Customer can't make or receive calls on RNO - can still make and receive calls on DNO<br>(Customer receives final bill from DSP and also new bill from RSP) | Customer calls RSP Switch or Service Termination support team<br>Customer calls Dealer - Dealer would contact RSP and feedback to Customer<br>Customer calls DSP - DSP refers Customer to RSP | RSP resolves with RNO immediately and calls DSP resolution team - DSP resolves with DNO immediately |
| 16.ONO rejects DNO Switch request (this becomes problem 15 if after 15:00hrs on Switch day) | DNO system receives reject response from ONO (wrong ONO or other reject code) | DNO handles internally | DNO resolves and re-submits request to correct ONO |
| 17.ONO fails to action Switch request (this becomes problem 15 if after 1500 hours on Switch day) | DNO system doesn't receive expected ONO response by 15:00hrs on Switch day<br>RNO system doesn't receive ONO confirmation response by 15:00hrs | DNO calls ONO Switch or Service Termination support team | DNO resolves with ONO |
| 18.ONO actions but fails to confirm Switch request | same as 17 above (note that the lack of ONO confirmation will result in no systems trigger for the application of the Switching administration charges by the RNO and DNO) | same as 17 above | |
| 19.ONO actions request incorrectly (version A - wrong MSISDN to correct RNO) | same as 17 above, plus DNO system receives ONO confirmation response for "wrong" MSISDN | same as 17 above | |

| Problem Scenario [14] | Symptom | Resolution Path | Resolution Action |
|---|---|---|---|
| | RNO system receives ONO confirmation response for “wrong” MSISDN | | |
| 20.ONO actions request incorrectly (version B - wrong MSISDN to wrong RNO | same as 17 above, plus DNO system receives ONO confirmation response for “wrong” MSISDN<br>RNO system doesn’t receive ONO confirmation response by 1500 hours on Switch day<br>Other NO (“wrong” RNO) system receives unexpected ONO response | same as 17 above | |
| 21.ONO actions request incorrectly (version C - correct MSISDN to wrong RNO) | DNO system receives expected ONO response but confirmation indicates “wrong” RNO<br>RNO system receives ONO response but confirmation indicates “wrong” RNO | same as 17 above | |
| 22.RSP activates subscription before Switch or Service Termination date | Line rental commences prematurely | Customer queries RSP | RSP resolves internally |
| 23.DSP fails to Terminate Current Subscription | Line rental continues after Switch Date | Customer queries DSP | DSP resolves internally |
| 24.Wrong Customer is Switched or has their Service Terminated by DSP (version A - wrong MSISDN to correct RNO) | "Real" Customer can make and receive calls on DNO - can make but not receive calls on RNO<br>"Wrong" Customer loses all service on DNO | “Real” Customer calls RSP - RSP diagnoses problem and calls DSP resolution hotline<br>“Real” Customer calls DSP - DSP refers Customer to RSP<br>“Wrong” Customer calls DSP | DSP actions Switch or Service Termination for correct MSISDN.<br>DSP identifies “wrong” MSISDN and actions a “Switch or Service Termination reversal”.<br>DSP identifies erroneous disconnection and reconnects “wrong” Customer (DSP may also diagnose problem & resolve) |
| 25.Wrong Customer is Switched or has their Service Terminated by DSP (version B - wrong MSISDN to wrong RNO) | "Real" Customer can make and receive calls on DNO - can make but not receive calls on RNO<br>"Wrong" Customer loses all service on DNO | same as 24 | same as 24 |

| Problem Scenario [14] | Symptom | Resolution Path | Resolution Action |
|---|---|---|---|
| 26.Customer is incorrectly Switched or has their Service Terminated by DSP (correct MSISDN to wrong RNO) | "Real" Customer can't make or receive calls on DNO - can't make or receive calls on RNO | "Real" Customer calls RSP - RSP diagnoses problem and calls DSP Switch or Service Termination support team<br>"Real" Switcher calls DSP - DSP refers Switching Customer to RSP | DSP actions a "Switch or Service Termination reversal" using ONO "Switch or Service Termination" team (as in 26) and then actions Switch-out to correct RNO |
| 27.Wrong Customer is Switched or has their Service Terminated by RSP | "Real" Customer can't make or receive calls on DNO, and can't make or receive calls on RNO<br>("Real" Customer may also receive new bill from RSP showing "wrong" Switcher's MSISDN)<br>"Wrong" Customer retains full service on DNO, has no knowledge of New Subscription on RNO | "Real" Customer calls RSP -<br>"Real" Customer calls DSP - DSP refers Customer to RSP | RSP diagnoses problem and resolves internally (de-activate wrong MSISDN and Cancel any pending charges, plus activate correct MSISDN) see section 5.4.4 |
| 28.Wrong Customer is Switched or has their Service Terminated by RSP and DSP (DSP may Switch wrong Customer to correct RNO or wrong RNO) | "Real" Customer can still make and receive calls on DNO - can't make or receive calls on RNO<br>("Real" Customer may also receive new bill from RSP showing "wrong" RSP Switcher's MSISDN)<br>"Wrong" DSP Customer loses all service on DNO<br>"Wrong" RSP Customer retains service on its NO [may be a different NO], has no knowledge of New Subscription on RNO) | "Real" Customer calls RSP - RSP diagnoses problem and resolves<br>"Real" Customer calls DSP - DSP refers Switching Customer to RSP<br>"Wrong" DSP Customer calls DSP | RSP resolves internally as in 29, and calls DSP resolution team<br>DSP resolves as in 26 |
| 29.Wrong Customer is Switched or has their Service Terminated by RSP and DSP incorrectly Switches Customer (to wrong RNO) | same as 28 above, but no "wrong" DSP Customer symptoms exist | "Real" Customer calls RSP - RSP diagnoses problem and resolves<br>"Real" Customer calls DSP - DSP refers Customer to RSP | RSP resolves internally as in 29, and calls DSP resolution team<br>DSP resolves as in 28 |
| 30.Wrong Customer is Switched or has their Service Terminated by DNO | same as 24 and 25 | same as 24 and 25 (diagnosis requires subscription status enquiry on NO) | same as 24 and 25 |

| Problem Scenario [14] | Symptom | Resolution Path | Resolution Action |
|---|---|---|---|
| 31.Customer is incorrectly Switched or has their Service Terminated by DNO | same as 26 | same as 26 (diagnosis requires subscription status enquiry on NO) | same as 26 |
| 32.Wrong Customer is Switched or has their Service Terminated by RNO | same as 27 | same as 27 (diagnosis requires subscription status enquiry on NO) | same as 27 |
| 33.Wrong Customer is Switched or has their Service Terminated by RNO and DNO | same as 24, 25 and 27 | same as 24, 25 and 26 (diagnosis requires subscription status enquiry on NO) | same as 24, 25 and 26 |
| 34.Customer wrongly Switched or has their Service Terminated | Customer loses service on DNO, has no knowledge of New Subscription on RNO<br>Customer receives new bill from RSP | Customer queries with RSP - RSP checks Switch or Service Termination request Authorisation and resolves via DSP Switch or Service Termination hotline<br>Customer complains to DSP - DSP identifies erroneous disconnection and reconnects "wrong" Switcher (DSP may also diagnose Switching problem and resolve via RSP resolution hotline) | RSP de-activates New Subscription on RNO and Cancels any pending charges, also calls DSP Switch or Service Termination hotline<br>RSP actions Switch back to DNO<br>DSP re-connects old subscription on DNO |
| 35. Customer fails to register on network for network activation trigger during PAC/STAC validity period. | Customer service continues with DNO. Service activates on RNO but fails to complete Switching process. | Customer may call RSP and question failure of port. | RSP advises Customer to obtain new PAC from DSP and proceed with Switch within new 30-day PAC Validity Period. |
| 36. Customer registers on network overseas with different IMSI – fails to trigger UK Switching/Termination process. | Customer service continues on DNO. Service not actioned on RNO, fails to complete Termination/Switching process. | Switch will complete when Customer rejoins home network or, if PAC expires, same as 35. | None needed unless PAC expires in which case, same as 35. |
| 37. Customer is overseas at time of Switch/port and is registered on VLR of overseas network. | Customer service with DNO continues while roaming overseas. | Switch will complete when Customer rejoins home network or, if PAC expires, same as 35. | None needed unless PAC expires in which case, same as 35. |
| 38. Customer SIM is not being used (e.g. in drawer) at time of Switch | Customer loses service on DNO, and no service on RNO as SIM is not used. | Same as 35 | Same as 35 |

## 7.7 Switch or Service Termination Day Problem Diagnosis

The table below presents a simple diagnostic tool which may assist in identifying the nature of any apparent Switch or Service Termination problems which are experienced by the Customer on the Switch or Service Termination day.

| **Capability on Switch or Service Termination MSISDN** | | | | **Diagnosis** | **Potential Scenarios** |
|---|---|---|---|---|---|
| Outgoing calls can be made on DNO | incoming calls can be received on DNO | Outgoing calls can be made on RNO | Incoming calls can be received on RNO | | |
| Yes | Yes | No | No | RSP and DSP may not yet have initiated (and certainly have not successfully completed) their respective Switch or Service Termination actions | 9, 10, 11, 12, 14, 15, 27, 28, 29, 32, 33 |
| Yes | Yes | Yes | No | RSP has completed the Switch or Service Termination, but DSP may not yet have initiated the Switch-OUT or Service Termination | 12 |
| Yes | No | Yes | Yes | RSP has completed the Switch-IN and DSP has initiated the Switch-OUT (i.e. the ONO re- routing action is complete) | - |
| No | No | Yes | No | RSP has completed the Switch-IN, but an error has occurred within the DSP Switch-OUT actions | 13, 16, 17, (19, 20), 21, (24, 25), 26, 30, 31 |
| No | No | No | No | DSP has completed the Switch-OUT or Service Termination, but an error or delay has occurred with the RSP Switch-IN action | 27, 32 |
| No | No | Yes | Yes | RSP and DSP have completed their Switch or Service Termination actions | 34 |

# Appendix A - Events

## Appendix A1 – Switching Event Timeline

**Switching**

Figure 3 illustrates the timeline of the actual Switching event - i.e. the sequence of Network Operator process transactions which perform the Switching of the MSISDN across networks. (Note, in the case of an initial Switch (i.e. the first time a number is Switched from the block operator to which it was originally assigned), the DNO performs both DNO and ONO transactions described below.)

It is not realistic to specify that these transactions must happen at a **precise** time. In practice, each Switching transaction may be scheduled to take place at a specific date/time, but there will be a time window (or "period of uncertainty") within which the transaction will actually be performed.

**Introduction of Locking Cut-off for submission of REQ file by the DNO**

The DNO must complete the request, in the form of the REQ file, to the ONO by 14:00hrs on the Switch day.

**Exchange of files - Switching Window**

Files should be exchanged between10:00hrs and 16:00hrs.

In Exceptional Technical Circumstances where a systems issue prevents an operator from processing files, exchanges after 16:00hrs will be permitted. Operators experiencing such issues should inform all impacted operators of the situation and may process until 22:00hrs for same day Switching. Any REQ files received after 22:00hrs will be processed the following Working Day

To avoid discontinuity of service for the Switching MSISDN, the Switching transactions must take place in a specific sequence, with each transaction completed before the next transaction commences. In the timeline diagram below, the time intervals A, B and C represent the respective time windows for the RNO, ONO and DNO Switching transactions described below.

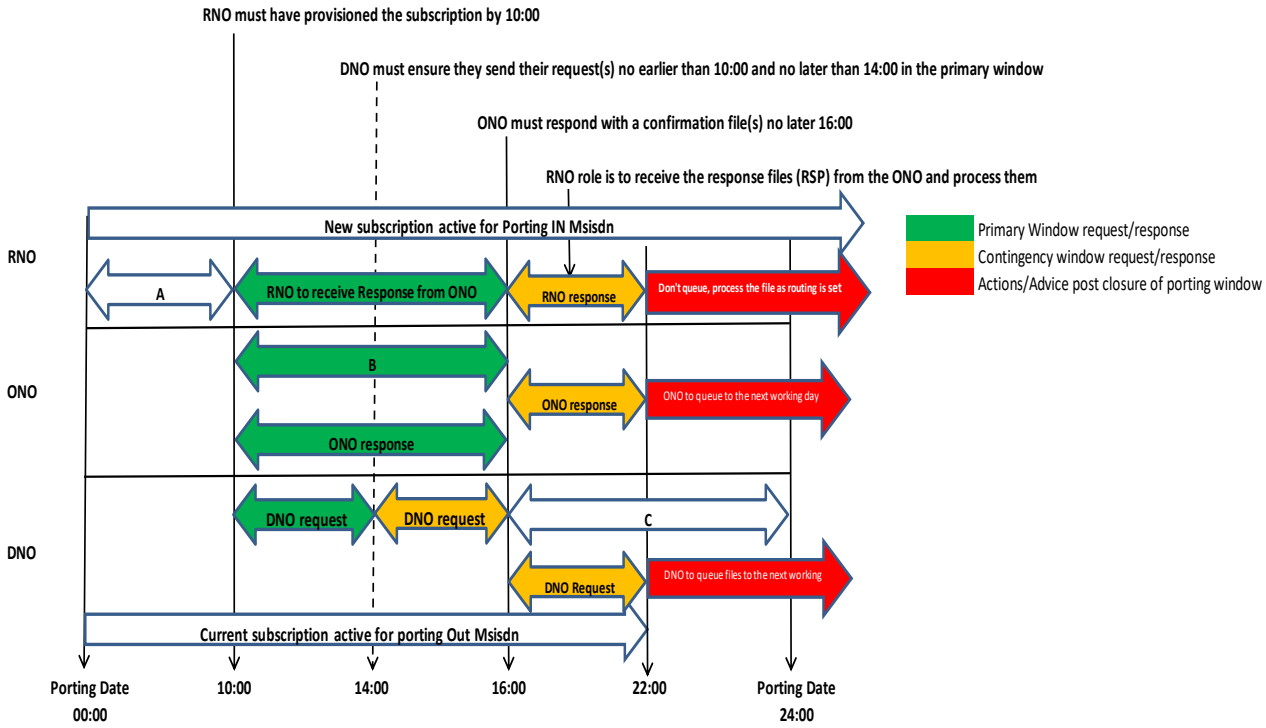



Figure 3: Switch Day Timeline

**A. RSP triggers the RNO to activate the New Subscription for the Switching MSISDN** - the New Subscription should be active on the RNO before 10:00hrs on the Switching date. This will enable:

- mobile-originating (MO) calls to be made by the Switching Customer on the RNO network (if using an appropriate SIM/handset combination for the RNO)
- mobile-Terminating (MT) calls to be received on the RNO network once the Residual Subscription has been modified by the ONO

**B. ONO modifies Residual Subscription** - this re-routes MT traffic into the RNO network and is only undertaken upon request from the DNO by receipt of an REQ file. Once completed, the ONO will respond with an RSP file before 16:00hrs on the Switching date. Note, the RSP file does not need to be sent only after 14:00hrs. It may be sent as soon as the Residual Subscription is modified based on the detail within the REQ file.

**C. DNO Terminates the Current Subscription for the Switching MSISDN -** this prevents the Switching Customer from making further MO calls on the DNO network after the MSISDN has been Switched to the RNO. The Current Subscription must:

- not be Terminated **before** the re-routing of MT traffic to the RNO; and
- be Terminated as close as is reasonably possible **after** the re-route has been completed.

Note, the DNO does not have to wait until 16:00hrs to Terminate the subscription. It must only ensure step B is complete. This is necessary to ensure the Customer receives continuity of service.

**Implications for the Customer**

The following implications arise from the "periods of uncertainty" associated with the respective Switching transactions (i.e. time windows A, B and C):

- the **total** time window for completing the Switching of the MSISDN is **A+B+C** (i.e. the period during which service is - at least partially - supported for the Switching MSISDN on **both** the DNO **and** RNO networks)
- the Customer's period of uncertainty is **B** - i.e. the "Switching window" during which full service will be disrupted (specifically incoming calls) as incoming traffic is re-directed by the ONO from the DNO to the RNO

The second implication is significant for the Customer and, as a result, it has been agreed that the "Switching window", **B**, will be limited to run from 10:00 to 16:00 hours (see Event Timeline Figure on the previous page).

**Implications for the SPs and ONO**

In practice, the DSP and RSP may not have "diarised" systems capabilities and will need to perform their respective Switching actions on the Switching date itself.

In order that the correct sequence of Switching transactions is maintained, this imposes further constraints on the partitioning of activities across the Switching event timeline; in particular, the RSP and ONO responsibilities across the Switching window, B.

As a consequence, the following SLAs shall apply to the RSP, DSP, and ONO actions:

1. The RSP must activate the New Subscription for the Switching MSISDN on the RNO by no later than 10:00hrs on the Switching date.

2. The DSP must initiate the Switch-out of the Switching MSISDN on the RNO no earlier than 10:00hrs, and by no later than 16:00hrs on the Switching date.

3. The ONO must attempt to respond to each re-routing request from the DNO within one hour.

If these SLAs are maintained by all parties, the ONO should have completed its response to all Switching requests by 16:00hrs (as indicated on the Event Timeline).

*In order to accommodate variance in ONO systems against this SLA, it is recommended that a "safety margin" of one hour is added into the timeline, and that successful completion of*

*the re-routing should not be queried until after 17:00hrs on the Switch Date. This allows a further hour (16:00 - 17:00hrs) to be used for recovery measures in the event of failed or erroneous Switches.*

There will also be an additional window of up to 22:00hrs for exceptions (including file transfers) caused by unexpected major incidents in operators' systems. This window is a safeguard to ensure that such issues can be addressed so that the Customer's service is not negatively impacted.

## Appendix A2 – Service Termination Event Timeline (Not Applicable to Bulk Switching)

**Service Termination following submission of a STAC - there are no 'periods of uncertainty'.**

A. **RSP triggers the RNO to activate the New Subscription for the new MSISDN** - the New Subscription must be active on the RNO **before** the Termination date. This will enable full service on both the RSP and DSP.

B. **DSP triggers the DNO to Terminate the Current Subscription for the old MSISDN before the end of the Termination day** - this prevents the Switching Customer from making further calls/SMS/data connections on the DNO network after the new service has been activated on the RNO.

This provides the Customer with an overlap period during which their service is active with the DSP on the old MSISDN, and with the RSP on the new MSISDN. This gives the Customer continuity of service, and time to inform their contacts of the new number, and to update contact information on apps where "Over The Air" messages/calls are sent to the old number (for example banking apps). However, critically, service overlap is limited to one day, which protects consumers from unwanted double billing.

## Appendix A3 – File Exchange Timeline

Files are exchanged between Network Operators on the Switching date to request routing updates (REQ) and to confirm routing updates (RSP).

Where the ONO=DNO, the DNO should provide an RSP file to the RNO once the routing update towards the RNO has been performed. This activity should be completed between 10:00 and 16:00hrs. However, a one-hour grace period is allowed for any minor issues that occur. Operators are required to process any files received until 22:00hrs on business days to prevent any undue delay, should a donor party have systems issues resulting in ports being completed late in the day.

Where the DNO is not the ONO an REQ file should be sent by the DNO to the ONO requesting traffic to be routed towards the RNO. REQ files must be sent between 10:00 and

14:00hrs in order to allow the ONO to perform routing updates and despatch the confirming RSP files by 16:00hrs in line with the industry regulations.

Should an operator have system issues delaying the transfer of REQ or RSP files they may continue sending files until 22:00hrs on Working Days.

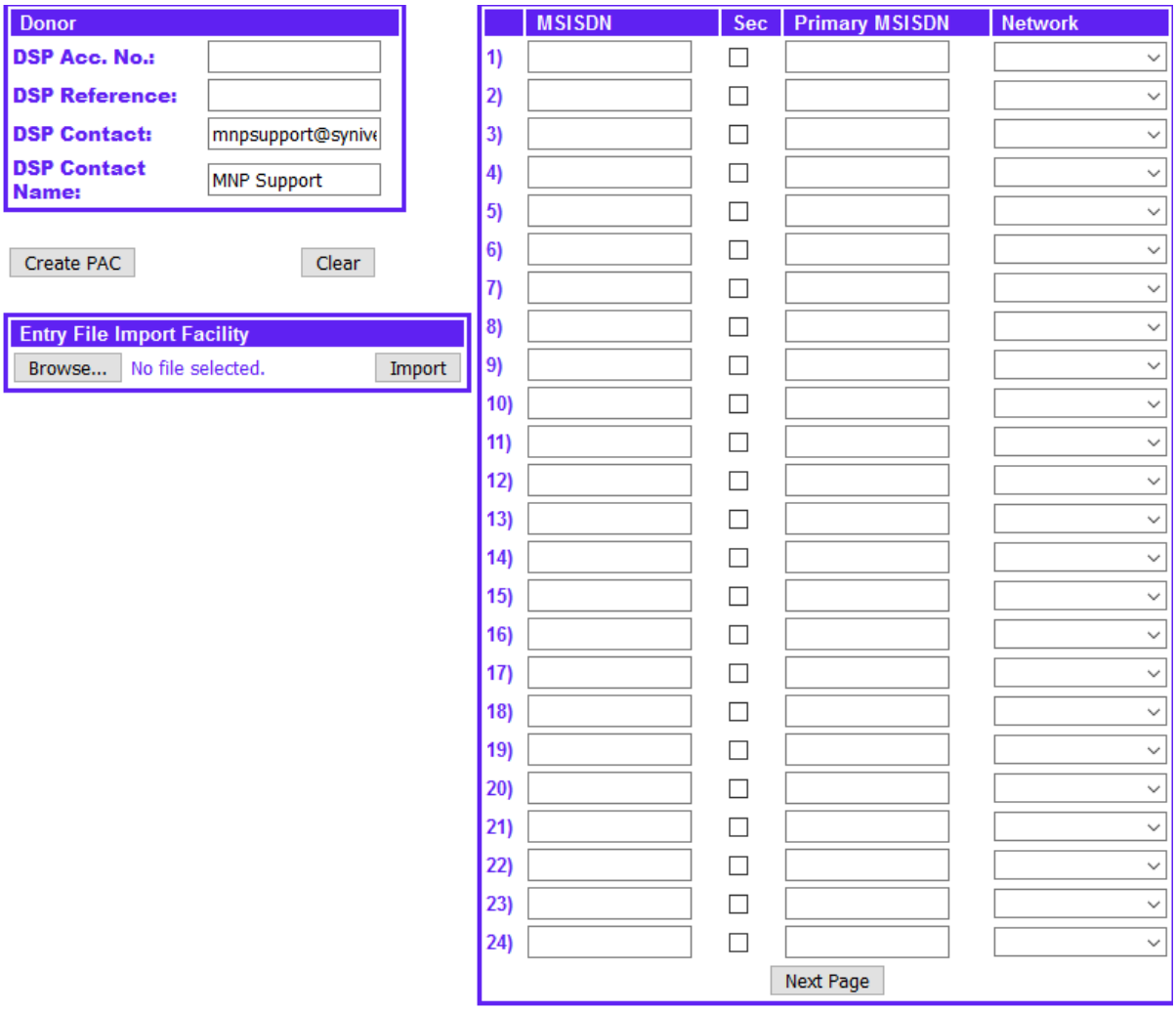
# APPENDIX B - Entry File Volume Entries Facility[15]

The CSS provides an 'Entry File import Facility' function (GUI and API) which facilitates the process of entering a large number of MSISDNs offline and then imported into the CSS and linked to a single PAC.

A maximum of 999 MSISDNs can be handled through the GUI and an unlimited (although the industry norm is 999) quantity via the API.

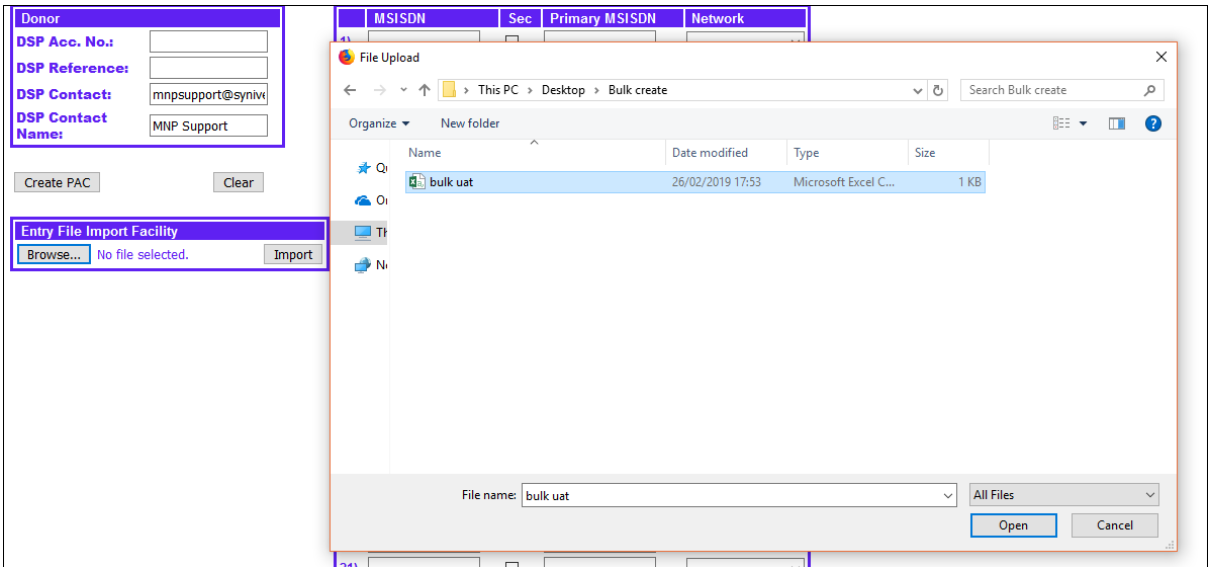
This function will not allow processing of STACs.

**Click on the create button (PAC Only):**




[15] This Appendix has been provided by Syniverse Technologies, who manage the CSS Switching Platform

The 'Entry File Import Facility' option has two controls the Browse combo-box and an import button.


**Import Button**

Once the CSV file has been located (import button becomes selectable), it can upload the file to the CSS by clicking on the Import button.

- Note: Files such as word or zip will not be recognized as valid import file. It must be ASCII file - see 'How to create a CSV file' below.

The CSV file will be imported, and the Confirm Entry page will be displayed if the structure is valid according to the format described in Entry CSV file format.

**How to create a CSV file**

A CSV file format is used to transfers data from one program to another. The CSV file contains a set of records (text lines), separated by a new line. Each record (text line) contains a set of fields separated by comma (,). The easiest way to create a CSV file is to enter MSISDNs using Excel and save the spreadsheet to a CSV format when saving the file. To do that from Excel follow these steps:

- Chose Save as option from the File menu.
- In the file name box, type in the CSV file name.
- In the Save as type list, choose the CSV (Comma delimited *.csv) option.
- Click save to save your file to your chosen location.

| | A | B | C | D |
|---|---|---|---|---|
| 1 | 07777123098 | | Eastern Ops | |
| 2 | 07777123099 | | Eastern Ops | |
| 3 | 07777123097 | 07712007654 | Eastern Ops | |
| 4 | 07777123095 | | Eastern Ops | |
| 5 | 07777123094 | | Eastern Ops | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |

**Entry CSV file format**

The entry file is based on the CSV file format. It contains entry records delimited with a line separator. Each record consists of three fields (MSISDN, Primary MSISDN, NO name) separated with commas. All fields must be present. A Primary field that is empty must not have any spaces. (Note: Switching a Secondary MSISDN is rarely requested. This is a legacy from the days when data/fax were carried over a second line. The Primary MSISDN (Customer's main MSISDN) would only need to be entered if there was a Secondary MSISDN associated and the Customer wanted to Switch it out as well).

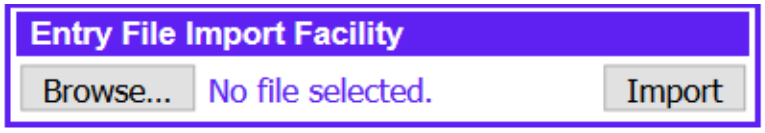
**Create entry-Record Structure**

| Field name | Field Type | Example | Description |
|---|---|---|---|
| MSISDN | Mandatory | 07888908123 | The Primary MSISDN number to be Switched/migrated |
| Primary MSISDN | Optional | 07888908678 | The entry is for a secondary number. This field contains the associated MSISDN number. |
| NO Name | Mandatory | ORANGE PCS | The name of the DNO |

**Submit Multiple Switch-Out Requests**

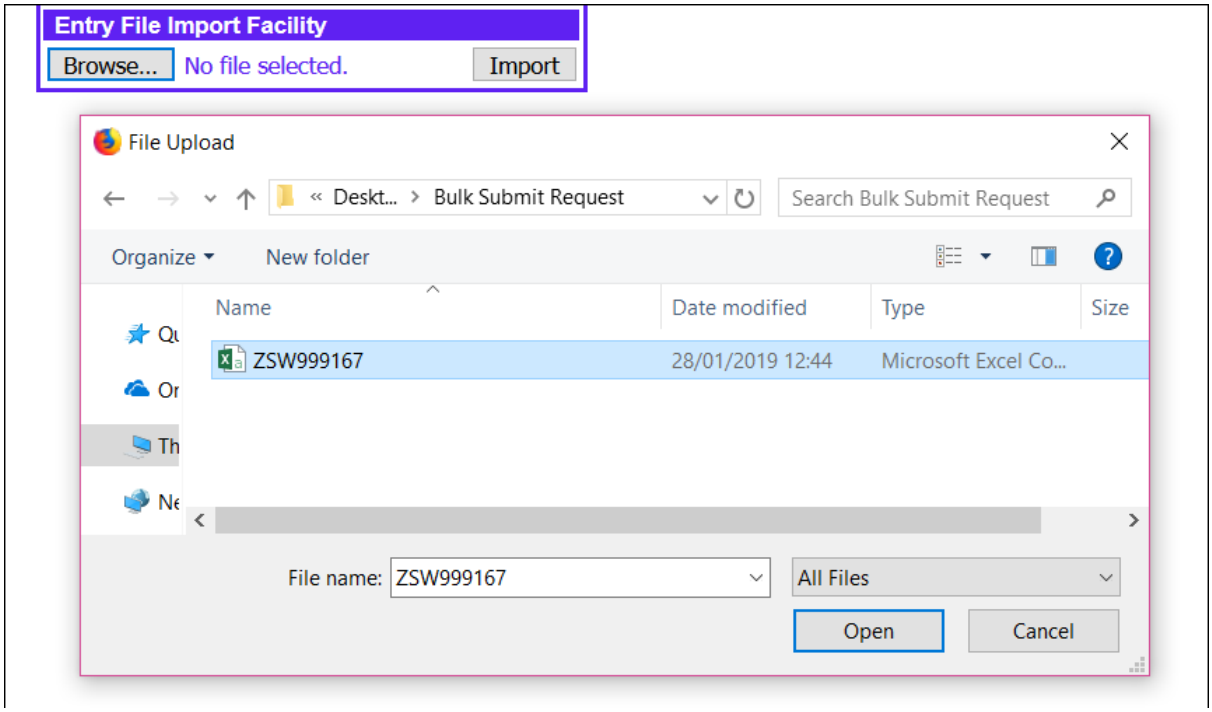
The RSP uses the Submit Multiple Requests page to submit a CSV file. This file will contain a number of MSISDNS with the same PAC to be closed. Thus, avoiding repeating the process of Submitting Request for multiple entries with same PAC.

Click on the Submit Multiple Request option.


**Browse combo-box**

This control allows you to select the file location of the CSV file that you would like to upload. You can either manually type the CSV file location or press Browse combo-box to navigate to the required file.




**Import Button**

Once the CSV file has been chosen (import button becomes selectable), you can upload the file to the CSS by clicking on the Import button. Note: File such as word or zip will not be recognized as valid import file. It has to be ASCII file.

The file format is described in the Submit multiple requests CSV file format sub-section. The import process will verify that all entries are linked to the same PAC and have open status.

For details on the information displayed, refer to Submit Request.

Once the RSP details have been entered, click the [Close Entries] button and the Multiple Requests Submitted page is now displayed.

**Submit multiple requests CSV file format**

The Submit Request file is based on the CSV file format. The file name should be the PAC number and it should contain a number of records (MSISDNS associated with this PAC), each record is delimited with a line separator. Each record consists of one field (MSISDN); the field is mandatory.

| Field name | Field Type | Example | Description |
|---|---|---|---|
| MSISDN | Mandatory | 07888908123 | The Primary MSISDN number to be ported/migrated |

| | A | B | C |
|---|---|---|---|
| 1 | 07712344123 | | |
| 2 | 07765008765 | | |
| 3 | 07765008885 | | |
| 4 | 07765008875 | | |
| 5 | 07765008985 | | |
| 6 | 07765008095 | | |
| 7 | 07765008465 | | |
| 8 | 07765008709 | | |
| 9 | 07765008705 | | |
| 10 | 07765008767 | | |
| 11 | | | |

# APPENDIX C - Fault Escalation - Generic Template

| | |
|---|---|
| Reporting Operator/Service Provider: | Reporting to Operator/Service Provider: |
| Reporting Provider/Operator | Addressed Provider/Operator |
| Date | Select Fault type |
| Description of issue: | |
| | |

| MSISDN | PAC/STAC | RNO | DNO | ONO |
|---|---|---|---|---|
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# APPENDIX D - How Service Providers and Network Operators are Identified on the CSS

**Network Operator (NO)**

- Must be established in CSS as a NO - and is setup with a unique 2-character code. Example is BT for O2 network;
- Requires at least one corresponding SP created in CSS - (e.g. Tesco Mobile is an SP on the O2 network);
- A NO must ensure that all other NOs recognise its ownership of all number ranges issued to it by Ofcom;
- Needs network level integration to support transport/signalling of voice, SMS, MMS traffic;
- Needs integration to each other NO to support exchange of Switching files (REQ, RSP etc); and
- Needs to support MSISDN Repatriation and associated number recycling/reuse.

**Service Provider (SP):**

- Added to CSS as an SP;
- PAC/STAC - All Service Providers are assigned a unique PAC/ STAC code. The code is determined by the specific SP and consists of 3 characters (e.g. TEL for Telefonica);
- An SP only has a relationship with the NO(s) which provide it with wholesale capabilities, including Switching routing changes.

MVNOs may fit into either of the above definitions from a Switching perspective.

*An O2 example:*

- The Tesco Mobile and Giffgaff MVNOs look like SPs from a Switching perspective because they use number ranges operated by O2 with O2 providing the REQ/RSP handling capabilities.
- Sky and Lycamobile are also O2 MVNOs but they have their own number ranges and some of their own network components. They look more like national roamers on the O2 cellular network. From a Switching perspective, they are seen as an MVNOs, and provide their own handling of REQ/RSP etc. In the CSS, MVNOs such as Sky and Lycamobile are considered as Sub Licensees, and they were assigned a NO code and an SP code when they were activated on the CSS.

# APPENDIX E - Change Control & Process Amendment Request Form

**Change Control Procedure**

1. Proposed amendments to the current Process Manual must be submitted to the Control Administrator. Proposed amendments must include the following mandatory information:

   Originator, date originated, proposed change (including textual amendments to the Process Manual), benefits of change, objectives of change, risk if change not implemented, assessment of scope of work and proposed implementation date.

2. Process Amendment Request Forms will only be accepted by the Control Administrator if the originator is a registered CP.
3. Process Amendment Request Forms will be circulated to the Controlled Distribution List for consideration at least 10 Working Days prior to the next scheduled OSG meeting. If no meeting is scheduled within a month of receipt of the form an ad hoc meeting may be called to discuss the proposed amendment.
4. Attendance at the OSG to discuss proposed process amendments is determined by the rules set out in the Constitution.
5. Amendment requests to the Switching process will be debated in the relevant OSG meeting and accepted or rejected by consensus voting in accordance with the rules set out in the Constitution.
6. When amendments are agreed the Process Manual will be reissued as appropriate.
7. If an SP wishes to change their 3 letter SP identifier (as used in the Authorisation Code) the SP must submit a formal request to the OSG, using the standard change request form, who will assess the need for the change. The OSG will seek to minimise the number of such changes, in order to avoid additional overheads in maintaining the CSS.
8. The introduction of a new SP shall require the OSG to designate them with a 3-letter code. All new or changed SP identifier codes shall be designed by the OSG to be as distinct as possible from each other, whilst readily identifying the SP name from the 3 alpha characters. Where the OSG has no objection, the designation of a 3-letter code may pass to the MNP System Administrator.
9. It is the responsibility of the Control Administrator to ensure that accepted changes are communicated in a timely manner to the controlled distribution list.

**(Optional Format)**

**UK Mobile Switching & Service Termination Process Amendment Request Form**

| | |
|---|---|
| **Originator:** | **Date raised:** |
| **Proposed Change (please include proposed textual amendments to Process Manual):** | |
| **Benefits of change:** | |
| **Risk if change not implemented:** | |
| **Proposal:**<br><br>**Accepted / Rejected** | **Date:** |
| **Reason for rejection (if applicable):** | |