

# CONSULT21



## BRIEFING

---

### 21CN Migration: End Customer Migration Command & Control - Functional Design Briefing

Issue1: Briefing Number C21-IM-016

Date: 1<sup>st</sup> September 2006

#### IMPORTANT NOTE

**This document is circulated for the purposes of consultation. As such, the contents are subject to change following such consultation.**

**This document is supplied to you in confidence as part of the Consult21 Process. It should not be circulated outside the Consult21 Communications Providers.**

Copyright © British Telecommunications plc 2006

#### DOCUMENT HISTORY

Issue 1.0 – 01/09/06	Issued to CPs following consultation
Issue 1.1 – expected end September	[to follow initial CP feedback period] and include section 8 – order fulfillment

CONTENTS

1	Introduction .....	4
1.1	Industry Consultation .....	4
1.1.1	<b>Phase 1 Consultation - Requirements Capture</b> .....	4
1.1.2	<b>Phase 2 Consultation – Design Development</b> .....	4
1.1.3	<b>Phase 3 - Implementation</b> .....	5
1.2	Purpose of this document .....	5
1.3	Next Steps: Closure of Phase 2 consultation - CP Feedback required .....	5
2	MCC Design Overview.....	6
3	Schedule Change Control & PEW's .....	7
3.1	National Migration Plan of Record Migration Schedule .....	7
3.2	Migration Schedule Change Control.....	8
3.2.1	<b>Change Request Process</b> .....	8
3.2.2	<b>Arbitration of Change requests</b> .....	9
3.3	Planned Engineering Works (PEW) Management.....	9
3.3.1	<b>Application &amp; Definition of PEWs</b> .....	9
3.3.2	<b>Timing of PEWs</b> .....	10
3.3.3	<b>Change Control of PEWs</b> .....	10
3.4	Changes to the PEWs or Migration Schedule outside of the CR window .....	10
3.5	CP Interfaces .....	11
3.5.1	<b>Migration Schedule</b> .....	11
3.5.2	<b>Communication Provider Interfaces</b> .....	11
3.5.3	<b>Management Reports</b> .....	12
4	Pre-Migration Management .....	13
4.1	Migration Timeline & Supporting Organisational Model .....	13
4.2	MCC Roles & Responsibilities .....	13
4.3	BTW Management Systems .....	14
4.3.1	<b>MIME</b> .....	14
4.3.2	<b>TEWT</b> .....	14
4.3.3	<b>Delivery Management Tool (DMT)</b> .....	15
4.3.4	<b>Management Reports</b> .....	16
5	Migration Control Management .....	17
5.1	Planning Management.....	17
5.1.1	<b>Playbook Lifecycle Management</b> .....	17
5.1.2	<b>Tactical Resource Models (TRM)</b> .....	18
5.2	Migration Timeline Quality Gateways .....	19
5.2.1	<b>Definition &amp; Purpose</b> .....	19
5.2.2	<b>Quality Gates on the Migration Timeline</b> .....	20
5.2.3	<b>Quality Gate Governance</b> .....	20
5.3	Migration Control Mechanism .....	21
5.3.1	<b>Preparation</b> .....	21
5.3.2	<b>Migration Control Mechanism Organisation</b> .....	21
5.3.3	<b>Communications within the Migration Control Mechanism</b> .....	23
5.3.4	<b>Migration Progress Control</b> .....	23
5.3.5	<b>Jeopardy Management</b> .....	23
5.4	Stability Management .....	23
5.4.1	<b>Communications during Stability Management</b> .....	24
5.5	CP Interfaces (Management Reports).....	25
6	Fallback Management .....	26
6.1	Fallback Principles .....	26
6.2	Fallback Scenarios.....	27
6.3	Stability Criteria .....	27
6.3.1	<b>External</b> .....	27
6.3.2	<b>General network health</b> .....	28
6.3.3	<b>Component failure</b> .....	28
6.3.4	<b>Fault Levels</b> .....	28
6.3.5	<b>Service Availability</b> .....	28
6.3.6	<b>Quality of Service (QoS)</b> .....	28

<b>6.3.7 Cutover process failure</b> .....	28
<b>6.3.8 Measures &amp; Monitoring</b> .....	28
6.4 Decision Making Process.....	29
<b>6.4.1 Organisation</b> .....	29
<b>6.4.2 Collating information</b> .....	30
<b>6.4.3 Decision Making</b> .....	31
<b>6.4.4 Management During a Fallback</b> .....	32
<b>6.4.5 Post Fallback Review</b> .....	32
6.5 CP Interfaces during Fallback.....	33
<b>6.5.1 Roles</b> .....	33
<b>6.5.2 Communications Format</b> .....	33
<b>6.5.3 Management Reports</b> .....	34
<b>7 Fault Management</b> .....	<b>35</b>
7.1 Pre-migration Phase.....	35
7.2 Fault Management Migration Preparation.....	36
7.3 Migration Phase.....	36
7.4 Stability Period.....	36
<b>7.4.1 Fault Monitoring and Reporting</b> .....	36
<b>7.4.2 Fault Resolution</b> .....	37
7.5 Fault Measurement.....	37
<b>7.5.1 Pre-Migration Measurement</b> .....	38
<b>7.5.2 Post-Migration Measurement</b> .....	38
<b>7.5.3 Gap Analysis</b> .....	38
7.6 CP Interfaces for Fault Management during the migration timeline.....	39

## 1 Introduction

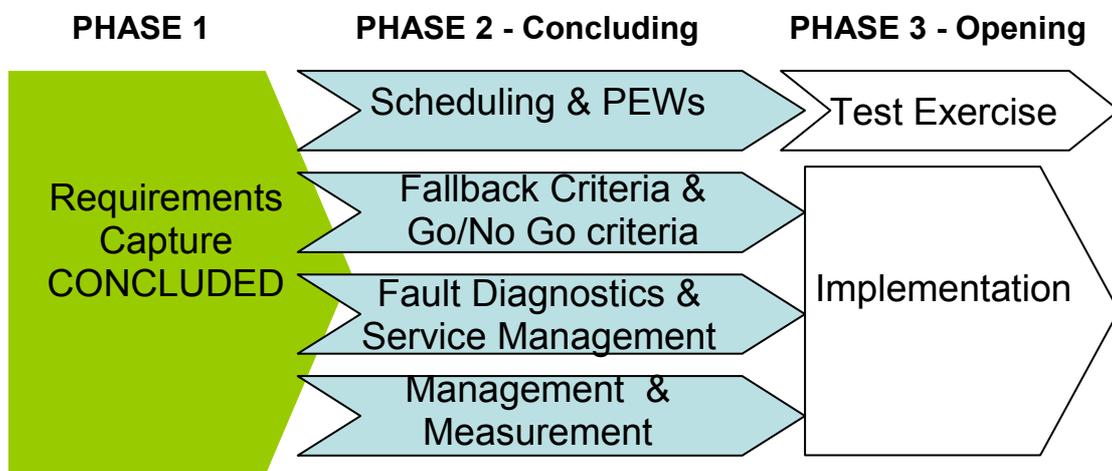
The Migration Command and Control (MCC) structure has been designed by BTW to effectively manage the migration of all end customers to 21CN. It is designed as a supplement rather than a replacement to business as usual (BAU) structures and processes.

### 1.1 Industry Consultation

The MCC structure has been designed by BTW following a period of consultation with BTW's Communication Provider (CP) customers undertaken through the Consult21 Implementation & Migration Working Group – specifically the Command & Control Experts.

The consultation comprises three phases as illustrated in figure 1

*Figure 1 – MCC Consultation Framework*



#### 1.1.1 Phase 1 Consultation - Requirements Capture

The first stage of consultation was a requirements capture, comprising::

- two multi-lateral workshops – 17/01/06 and 14/04/06
- a formal period of consultation operating between 04/04/06 to 26/04/06

These requirements were considered by BTW in development of its design and informed the definition of the five core business functions which underpin the MCC. Confirmation of the incorporation within the design for each of the identified CP requirements is contained within Annex A of this Briefing

#### 1.1.2 Phase 2 Consultation – Design Development

This second stage of consultation comprised:

- 3 multi-lateral workshops covering – Scheduling & PEWs (18/05/06), Fault Diagnosis & Service Management (23/05/06) and Fallback & Go/No Go criteria (24/05/06)
- 2 separate periods of Industry consultation:
  - C21-IM-008 operating between 29<sup>th</sup> June & 20<sup>th</sup> July 2006
  - C21-IM-009 operating between 19<sup>th</sup> June & 3<sup>rd</sup> July 2006
- A further multi-lateral workshop on 3<sup>rd</sup> August to facilitate further discussion on issues arising out of the final design and conflicting CP requirements
- Issue of Briefing C21-IM-015 detailing Management Reporting information provided by BTW during 21CN migration and review of this proposal at the MCC Workshop on 3<sup>rd</sup> to collate CP feedback.

### 1.1.3 Phase 3 - Implementation

Phase 3 consultation opens at the Migration Command & Control Experts session scheduled on 26<sup>th</sup> September in parallel with the formal conclusion of Phase 2 consultation. This final phase of consultation will consider:

- Testing of MCC interfaces & opportunities for CPs to prepare their organisations for migration
- the detail of how the operational review process be applied to the MCC during Pathfinder

## 1.2 Purpose of this document

The purpose of this briefing is to provide BTWs CP customers with an overview of the design of BTWs MCC structure to underpin mass migration of end customers and in particular to define the interfaces between the MCC and the CP community. This briefing also provides a gap analysis against the CP requirements for MCC identified during Phase 1 consultation (Annex A)

*Note: Within many of the MCC business functions, BTW has provided detail of the MCC structure that does not interface directly to the CP community however this additional information has been provided in the interests of clarity of understanding and communication and to provide confidence that the MCC design fulfils its intention*

CPs are invited to note that:

- BTW will also be updating shortly Briefing C21-IM-013 to include a section on the operation of the MCC during Pathfinder.
- Information within this Briefing supersedes Briefing C21-IM-015 which should no longer be considered current
- This briefing does not include the order fulfilment (including management of in-flight orders) section and this will be added in a later issue as was outlined at the MCC Experts on 3<sup>rd</sup> August

## 1.3 Next Steps: Closure of Phase 2 consultation - CP Feedback required

As agreed within the Implementation & Migration Working Group plan (discussed at the MCC Experts on 3<sup>rd</sup> August and IMWG on 15<sup>th</sup> August), BTW is providing this briefing ahead of the next MCC Experts meeting to facilitate review and comment by CPs.

Feedback should be provided to [consult21@bt.com](mailto:consult21@bt.com) or directly to:

Dave Jackson on 0121 230 2383 or by email at [david.j.jackson@bt.com](mailto:david.j.jackson@bt.com)

BTW asks that CPs make every effort to review the contents of this briefing with the appropriate parts of their organisations and raise any questions with BTW prior to the session on the 26<sup>th</sup> in order to enable BTW to provide the clarification required and if applicable effective discussion of issues.

There will be a slot on the agenda for this briefing at the next MCC experts on the 26<sup>th</sup> September this session will focus on a review of CP requirements captured and how they are incorporated in the MCC design (or not) to support consultation closure.

BTW intends to formally close Phase 2 consultation, following the MCC Experts session on 26<sup>th</sup> marked by the issue of this briefing at issue 2 status including any clarifications as appropriate.

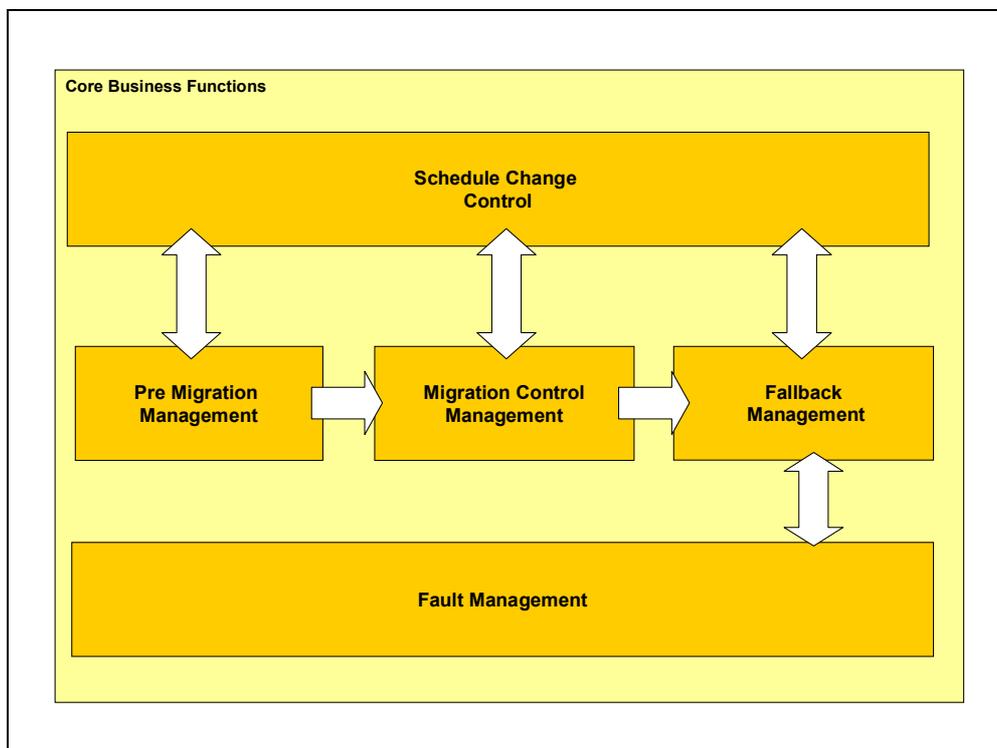
## 2 MCC Design Overview

The purpose of the MCC is to manage the migration of end customers onto 21CN as outlined within the National Migration plan of record and as underpinned by the Migration Schedule.

To achieve this objective as illustrated in figure 2 below, the MCC performs five management functions:

- Schedule Change Control (Section 3 of this briefing)
- Pre-migration management (section 4 of this briefing)
- Migration control Management (section 5 of this briefing)
- Fallback Management (Section 6 of this briefing)
- Fault Management (Section 7 of this briefing)
- Order Fulfillment (Section 8 – which will be added at next issue]

**Figure 2 – MCC Core Business Functions**



Each function performs a specific objective within the MCC, and interfaces to both internal organisations, and external parties.

The MCC structure will interface to BTWs CP customers for the following functions:

- Migration Schedule Change Control including Migration Schedule dissemination (section 3)
- PEWs distribution and Management (Section 3)
- Fallback Management including fallback criteria (Section 6)
- Fault Management (Section 7)

### 3 Schedule Change Control & PEW's

#### 3.1 National Migration Plan of Record - Migration Deployment Schedule

BTW has already published through the NIPP & LLU portals its National Migration Plan of Record (this will shortly be re-stated at issue 2). This document includes the Migration Deployment Schedule providing the sequencing and timing of DLE and DSLAM migrations at the quarterly level. The existing agreed processes and publication timetable for the quarterly version of the Migration Deployment schedule will continue unaffected by the information contained within this briefing.

The Migration Command & Control structure & processes deal with the dissemination of this Migration Deployment Schedule at levels of granularity lower than the quarterly level and CPs should recognise that the MCC processes are an extension of the established process designed to operate within the period immediately preceding end customer transfer when CPs and BTW will begin more detailed preparations for the migration of affected end customers.

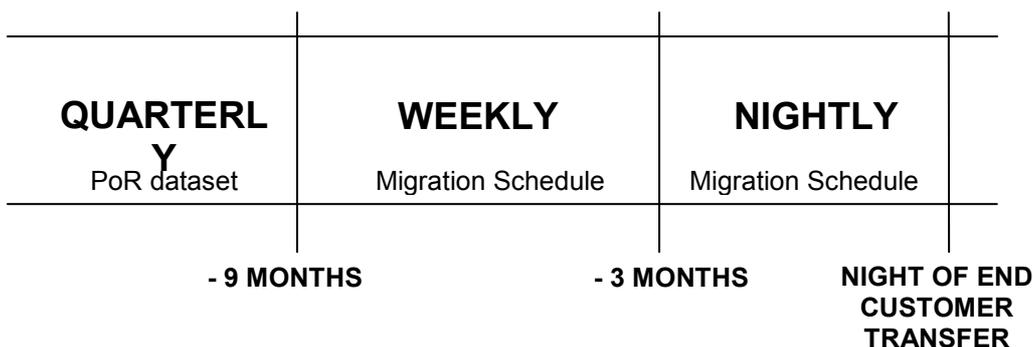
In summary, the Migration Deployment Schedule as issued by the MCC is simply a more detailed view of that already published at the quarterly level through the National Migration Plan of Record – superseding any information held at the quarterly level for the same period of time as illustrated in Figure 3 below.

The Migration Deployment Schedule will contain the same level and type of data as the National Migration Plan of Record and in the same format but simply show the ‘night of migration’ (transfer) at a greater level of granularity. CPs should note that the Migration Deployment Schedule published as part of the National Migration Plan of Record, already includes a view of the Pathfinder sites at the week commencing level and this should be viewed as the first issue of the Migration Deployment Schedule by the MCC.

The Migration Deployment Schedule will be made available to CPs as follows:

- At the week commencing level                      9 months prior to transfer
- At the night level    3 months prior to transfer

**Figure 3 – Granularity of the National Migration Plan of Record**



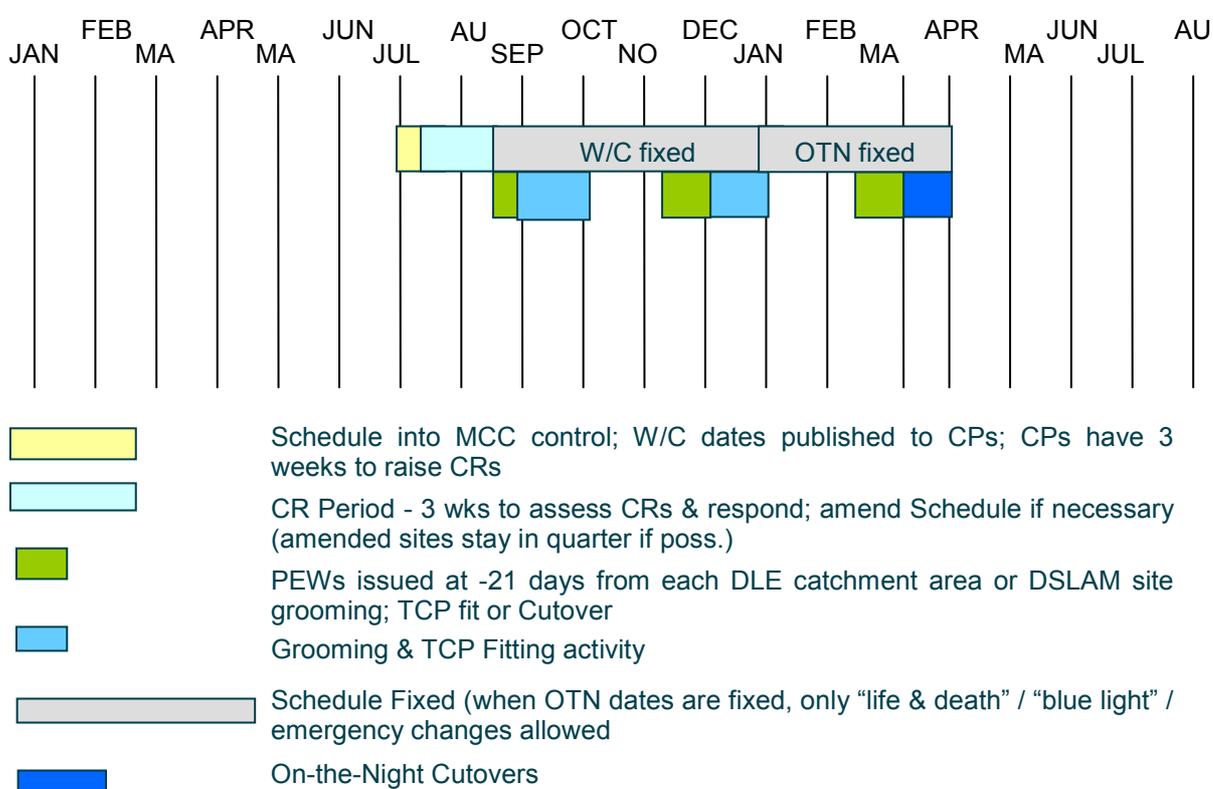
The provision of Migration Schedule information at the week commencing level 9 months prior to the night of end customer transfer enables CPs to commence preparations for 21CN migration of end customers sufficiently in advance to be able to manage the impact of migration on such activities as marketing campaigns and their own engineering work schedules.

### 3.2 Migration Schedule Change Control

The purpose of Schedule Change Control is to manage changes via change-requests (CR's) raised against the National Migration Plan of Record/Migration Schedule following its issue to CPs through an agreed change management process.

In addition to the existing process whereby CPs can request changes at the quarterly level within the National Migration Plan of Record until 21 months prior to end customer transfer (at this point, the PoR becomes fixed at the quarterly level), CPs can also raise Change Requests against the Migration schedule once the Migration Schedule is published at the weekly level at -9 months. This window lasts for a period of 3 weeks before the Migration Schedule is fixed at the week commencing level. This additional period for change requests is illustrated in Figure 4 below:

**Figure 4 – Migration Schedule Timeline**



#### 3.2.1 Change Request Process

The Change Control process in operation for the Migration Schedule will be similar and consistent to that already in operation for the National Migration Plan of Record. CPs are invited to note:

- the same form is used for the submission of CRs and they should be forwarded to [consult21@bt.com](mailto:consult21@bt.com) on completion
- the CRs received by BTW are shared with all CPs for comment on an anonymous basis (see section 3.5.3 for details of the channel)
- comments on the impacts of any proposed CR on any CP will be considered by BTW in its arbitration at the end of the Change Request window

### 3.2.2 *Arbitration of Change requests*

Change can be raised for any reason, including commercial. All CP generated CRs will be assessed by BTW on its own merits however in the case of conflicting views; BTW will arbitrate in favour of the existing schedule in order to assure planning certainty for the widest possible number of CPs and end customers.

However BTW will accept CRs which are requested in order to minimise a direct risk to life and death affecting services e.g. where a CR is raised to ensure that the primary/secondary and alternative route for an Emergency Authority are not migrated simultaneously. [This criteria has been established as a “rule” within the migration schedule process internally within BTW.

### 3.3 **Planned Engineering Works (PEW) Management**

To further underpin the management of end customer migration, the MCC proposes to issue Planned engineering Works (PEW) notices to CPs in addition to the migration schedule.

BTW has through the design of the MCC tried to keep as close to the business as usual (BAU) PEW process as possible, making only the requisite changes to deal with the scale and complexity of 21CN migration as appropriate to minimise the impact on BTWs CP customers whilst providing them with sufficient information to be able to effectively manage their end customers through 21CN migration.

All PEWs issued for 21CN activities will be identified as being 21CN Migration related

#### 3.3.1 *Application & Definition of PEWs*

For each technology being migrated, PEW’s will be applicable within the migration timeline:

- Grooming
- TCP install (applies to voice as per TE Impact Matrix)
- Voice Transfer (applicable to BB as per TE Impact Matrix)
- BB Transfer

Two types of PEWs will be issued by BTW:

- Specific and
- Blanket

For Grooming & TCP Fit activities, “Blanket” PEWs will be issued. A “Blanket” PEW will normally cover a specified window of X<sup>1</sup> weeks and this period may differ dependant upon the amount of activity to be undertaken eg some DLEs have a greater number of CONCs attached and therefore grooming will take significantly longer. BTW has included Blanket PEWs in the design to:

- Reduce the information overhead on the CP community in managing PEWs
- Increase the efficiency and flexibility of resource allocation for BTW delivery teams enabling BTW to implement the process whereby for grooming and TCP install 3 attempts are made to complete the activity prior to a call in progress being disconnected (see TE Impact Matrix). It is anticipated that this process will reduce the impact on end customers of grooming by reducing the probability that a call in progress will be cut-off.

For the avoidance of doubt, for Transfer Activities a specific PEW will be issued and Table 1 below shows all activities within the timeline that can generate a PEW. For each activity, the

---

<sup>1</sup> BTW will confirm the time period for the Blanket PEW in issue 1.1

level of PEW granularity (i.e. DLE, CONC Unit, DSLAM or activity) is shown; the duration of cover, and any additional information.

**Table 1 – PEW Timeline & Definition**

Activity	PEW Timeline	Type of PEW	Granularity	Content
Voice Grooming	14 days	Blanket	Conc Units (MDFs)	<ul style="list-style-type: none"> <li>• Location sites by 1141 code or DSLAM site identifier.</li> <li>• Start Date &amp; Time.</li> <li>• Summary information</li> </ul>
TCP Install	14 days	Blanket	Conc Units (MDFs)	<ul style="list-style-type: none"> <li>• Location sites by 1141 code or DSLAM site identifier.</li> <li>• Start Date &amp; Time.</li> <li>• Summary information</li> </ul>
Voice end-customer Migration	14 days	Specific	DLE & all its Conc Units	<ul style="list-style-type: none"> <li>• Location sites by 1141 code or DSLAM site identifier.</li> <li>• Start Date &amp; Time.</li> <li>• Summary information</li> </ul>
Broadband Grooming	14 days	Blanket	DSLAMs (MDFs)	PEW reference, referring CPs to BCCR for additional information including <ul style="list-style-type: none"> <li>• DSLAM site identifier.</li> <li>• Start Date &amp; Time.</li> <li>• Summary information</li> </ul>
Broadband End - Customer Migration	14 days	Specific	DSLAM	PEW reference, referring CPs to BCCR for additional information including <ul style="list-style-type: none"> <li>• DSLAM site identifier.</li> <li>• Start Date &amp; Time.</li> <li>• Summary information</li> </ul>

An Example Dataset for Broadband is included in Annex B

### 3.3.2 Timing of PEWs

PEWs will be triggered least 21 days prior to the planned activity and will be issued to CP's at least 14 days prior to activity.

### 3.3.3 Change Control of PEWs

There will be no ability for a CP to request changes to 21CN PEWs, this is to provide increased certainty (as far as it possible to do so) for all CPs and end customers that transfer activities will happen as planned.

The Migration Schedule will provide CPs with the advance visibility of the timing of transfer activities in order for them to manage preparation activities and the Transfer Engineering timeline provides a profile of when pre-migration activities are likely to take place.

### 3.4 Changes to the PEWs or Migration Schedule outside of the CR window

As in any programme of the scale and complexity of 21CN migration, there will inevitably be “aborted” migrations where BTW is unavoidably able to transfer end customers as per outlined in the schedule or in a PEW which has already been issued. These aborted migrations may arise as a consequence of an unavoidable delay in the preparation of the site or in the case of a national or regional incident which arising which may arise that affect the ability to manage life and death services [also see section 6.3.2]

Should any site slip, the schedule control function within the MCC will seek to re-schedule the site as soon as practicable after the original transfer date. Depending on when the abort occurred this could be within the same week/month and BTW will endeavour to reschedule within the quarter.

Where PEWs have been issued by BTW, BTW will notify CPs of the change through the up-issue of the original PEW (with the same reference number) and for the avoidance of doubt the re-issued PEW will be subject to the 14 day notification period

### 3.5 CP Interfaces

#### 3.5.1 Migration Schedule

The Migration Schedule will be published to CPs via a secure web portal (accessed by a link from the Consult21 website) on a rolling basis with the portal providing CPs access to updated information (sourced from BTWs DMT system) as appropriate every 24 hours, overnight. Through this process CPs are able to keep up to date with which sites/DLE's/DSLAMs are migrating, on what dates, at increasing levels of granularity

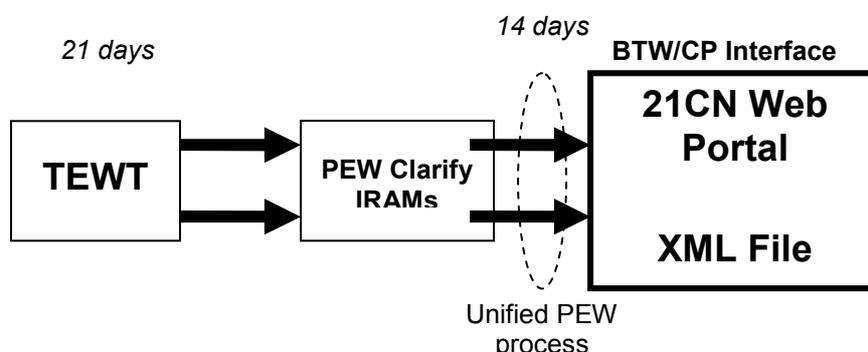
*Note: - This portal will also be the channel by which the MCC publishes any management reporting information to CPs*

#### 3.5.2 Communication Provider Interfaces

Design Element	Frequency	Interface
Change Request Form	On CP demand	Consult 21 Website
Change Request Accept / Reject notification	1 per Change Request processed	By email, directly to the raiser
PEW Data	Dependent upon PEW (see above section)	See Figure 5 below

Figure 5 below illustrates the CP interfaces across which PEW data will be provided to CPs and for reasons of clarity shows how within BTW PEWs will be raised by the Transfer Engineering Workflow Tool (TEWT) onto PEW Clarify / IRAMs, based on the TEWT timeline. PSTN & BB PEWs will follow a standard process for 21CN similar to the existing BB process.

**Figure 5 – CP Interface for PEW Data**



### 3.5.3 Management Reports

Through the MCC, BTW will provide the following Management reporting Information to CPs:

<b>Communication</b>	<b>Frequency</b>	<b>Channel</b>
The 'week of migration date' for all Migrations within a leading 9 month window	Real Time	Web Interface linked through Consult 21 website (Sourced from DMT)
The 'night of migration date' for all Migrations within a leading 3 month window	Real Time	Web Interface linked through Consult 21 website (Sourced from DMT)
The Number of Change Requests (CR's) received	Weekly	Consult 21 Website
The current status of CR's being progressed against CR reference number	Weekly	Consult 21 Website
All CR accept / reject notifications	Once, per CR	Email

## 4 Pre-Migration Management

*Note: Other than the Management Reporting outlined in section 4.3.4, the MCC does not interface to CP's during the Pre-Migration Phase.*

Pre-migration management covers the Prepare Network and Configure and Verify phases of the generic transfer engineering process for 21CN migration.

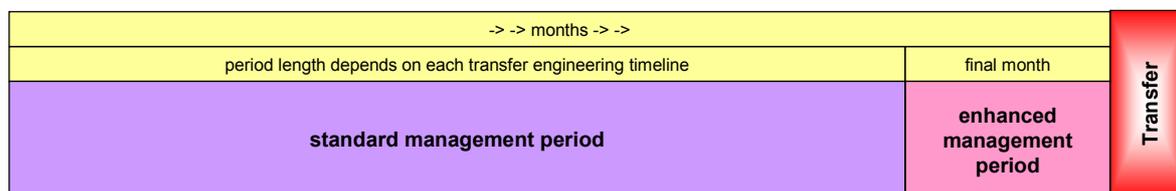
### 4.1 Migration Timeline & Supporting Organisational Model

The MCC design is based upon the principal that a 'migration timeline' can be managed for each DLE or DSLAM physical site migration. Migration timelines are the mechanism used to define a set of sequential activities that enable a DLE or Broadband site to migrate from its current technology to 21CN.

These migration timelines are generic, based on the activities required, and include interlocks to other related or enabling activities. Consequently a timeline can be described as an end to end process to enable a single migration.

The principle key approach by the MCC to Pre-Migration Management is to implement two organisational models with 'ownership' of a given DLE/DSLAM transfer by each model being dependent on each transfer's progression along the appropriate transfer engineering timeline. The two models are known as the 'standard' and the 'enhanced' management periods. In summary, the Standard Management Structure is in place until the final 4 weeks of a migration timeline, then the Enhanced Management Structure is utilised - this is illustrated in Figure 6 below.

**Figure 6 – Operating periods of the two MCC organizational models.**



BTW has developed this approach for the MCC to facilitate greater focus on the completion the schedule of tasks due within the final month of a transfer engineering timeline and therefore reduce the potential for transfers being otherwise avoidably aborted.

This approach, together with automated delivery management systems, will maximise BTW's existing programme management, work area delivery skills and reduce to a minimum manual handovers and interfaces to the MCC structure.

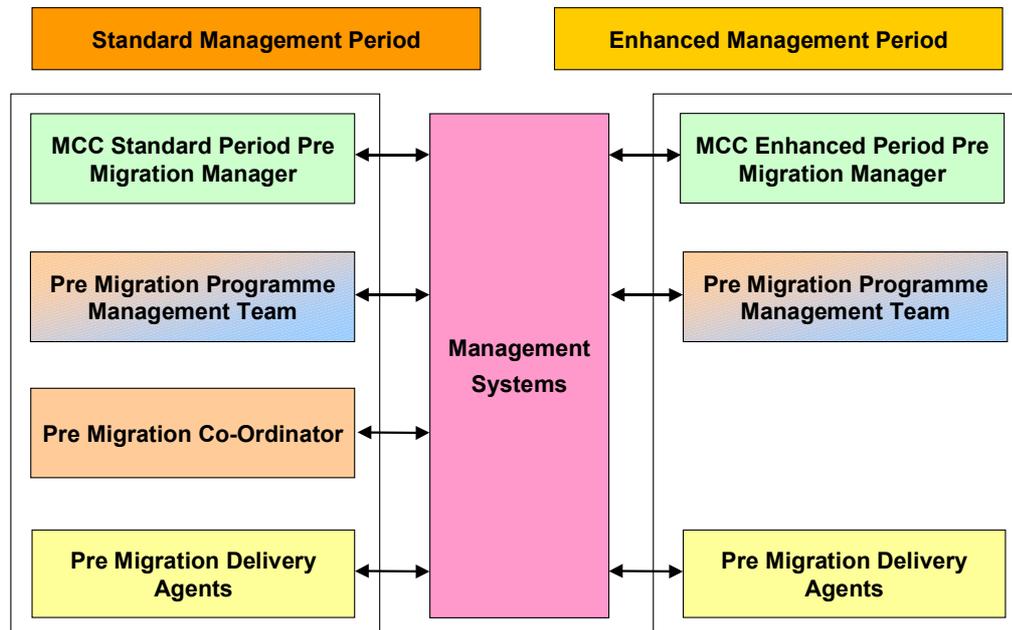
### 4.2 MCC Roles & Responsibilities

As illustrated in Figure 7 below, each model's structure will comprise of a combination of the roles carried out by managers within the MCC - all of whom will work together as a virtual teams on a per DLE or Broadband site basis:

- Pre-migration Programme Management Team
- Pre-migration Coordinators
- Delivery agents.

**Figure 7 - management structure principles for each model.**

**21CN Pre Migration Management**  
- management period structure principles



### 4.3 BTW Management Systems

To support migration timeline management, facilitate activity automation, reduce manual handovers and underpin migration programme management, the MCC will use two systems:

- MIME (Management of Infrastructure Migration from the Local Exchange) and
- TEWT (Transfer Engineering Workflow Tool) will be utilised.

#### 4.3.1 MIME

MIME covers the following sub-component areas:

- CP Interconnect Migration
- BTW Route Capacity Migration
- DLE and Concentrator Closure

The functional remit of MIME is to provide:

- Tracking of the overall progress of the CP Interconnect Migration and BTW Route Capacity Migration programmes
- Scheduling of Delivery Agent's tasks
- Tracking of Delivery Agent's task achievement
- Task and jeopardy monitoring
- Tracking of the overall progress against each DLE
- CP's costs tracking
- Information and report distribution

#### 4.3.2 TEWT

TEWT is a WEB based application and covers the migration of end customer lines for:

- DLE to MSAN Transfer – POTSISDN2
- ISDN30 Transfer

- Broadband Transfer

The functional remit of TEWT is to provide:

- Tracking of the overall progress of the DLE to MSAN (PSTN and ISDN2), ISDN30 and Broadband programmes
- Scheduling of Delivery Agent’s tasks
- Tracking of Delivery Agent’s task achievement
- Task and jeopardy monitoring
- Tracking of the overall progress against each DLE and/or site
- Information and report distribution

Many different functions within the MCC structure will access TEWT in respect of the migration of end customer lines with each user’s role, plus each timeline’s progression status, allowing specific actions to be instigated or completed.

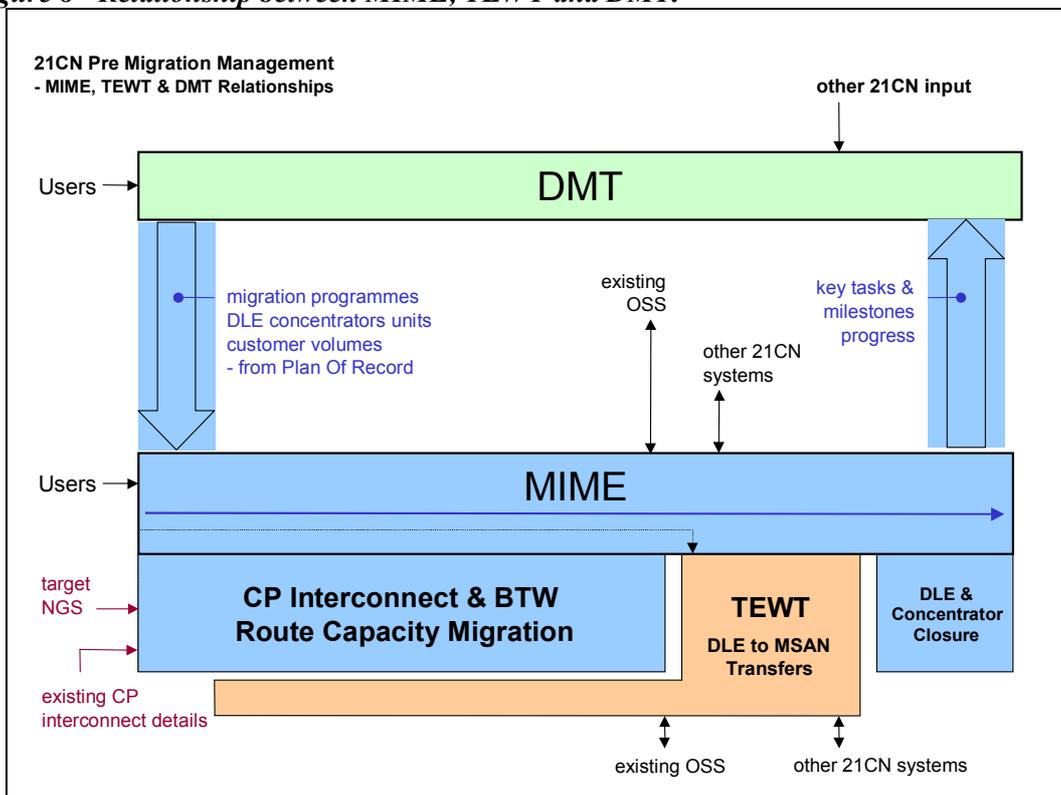
#### 4.3.3 Delivery Management Tool (DMT)

Delivery Management Tool (DMT) interfaces with MIME and with TEWT and provides BTW with the capability to manage and report on the 21CN migration programme and the ability to manage the constituent plans in a consistent, end-to-end manner. This tool is the source of much of the Management Reporting information which will be provided to CPs through the MCC.

DMT is a configurable system to enable the management of many different types of concurrent, but interdependent programmes – including activities relating to hardware and transmission delivery, service migration and platform closure. It combines a generic programme management tool with a DMT specific database that converts lists of deliverables and end dates, plus task synthetics, into fully formed plans.

DMT is the source of the 21CN National Migration Plan of Record/Migration schedule.

**Figure 8 - Relationship between MIME, TEWT and DMT.**



In summary, MIME and TEWT will be used to manage timelines (for CP Interconnect and PSTN / ISDN / BB respectively), whilst DMT will be used as the overarching management tool, controlling the National Migration Plan of Record/Migration Schedule.

The systems BTW have developed work in conjunction with the organisational hierarchies to support the planning management, jeopardy management and escalation management functions. Ultimately, the delivery of timelines is a mass scaled delivery exercise, underpinned by numerous proprietary systems to BT.

**4.3.4 Management Reports**

<b>Communication</b>	<b>Frequency</b>	<b>Channel</b>
The number and name of migration sites within Pre-Migration	Weekly	Consult 21 Website
The number and name of sites currently within the Pre-Migration window	Weekly	Consult 21 Website
The number and name of sites post Quality Gateway 1 (Decision to Proceed to Legacy Grooming)	Weekly	Consult 21 Website
The number and name of sites post Quality Gateway 2 (Decision to proceed to the Customer Churn process)	Weekly	Consult 21 Website

*See section 5.2.2 for full MCC Quality Gate definitions*

## 5 Migration Control Management

### 5.1 Planning Management

*Note: The MCC does not interface to CP's during the Planning Management Phase. This business function is included for information only.*

The MCC Migration Planning Management function ensures that all Migration activities are scoped, managed and undertaken, prior to an 'on the night' migration and its aim is to minimise migration risk. This entails:

- Lifecycle management of the migration 'Playbooks'
- Production of a Tactical Resource Model
- Migration Resource Fulfilment Process

#### 5.1.1 Playbook Lifecycle Management

A Playbook is a migration manual which details all relevant information in order for BTW to undertake a migration. The purpose of a Playbook is to be used:

- as a whole, by the MCC Migration Manager to manage and track specific activities on the night of migration.
- as a subset of data, by the delivery agents within all supporting organisations 'on the night' to procedurally detail their specific activities.

Playbooks are specific to

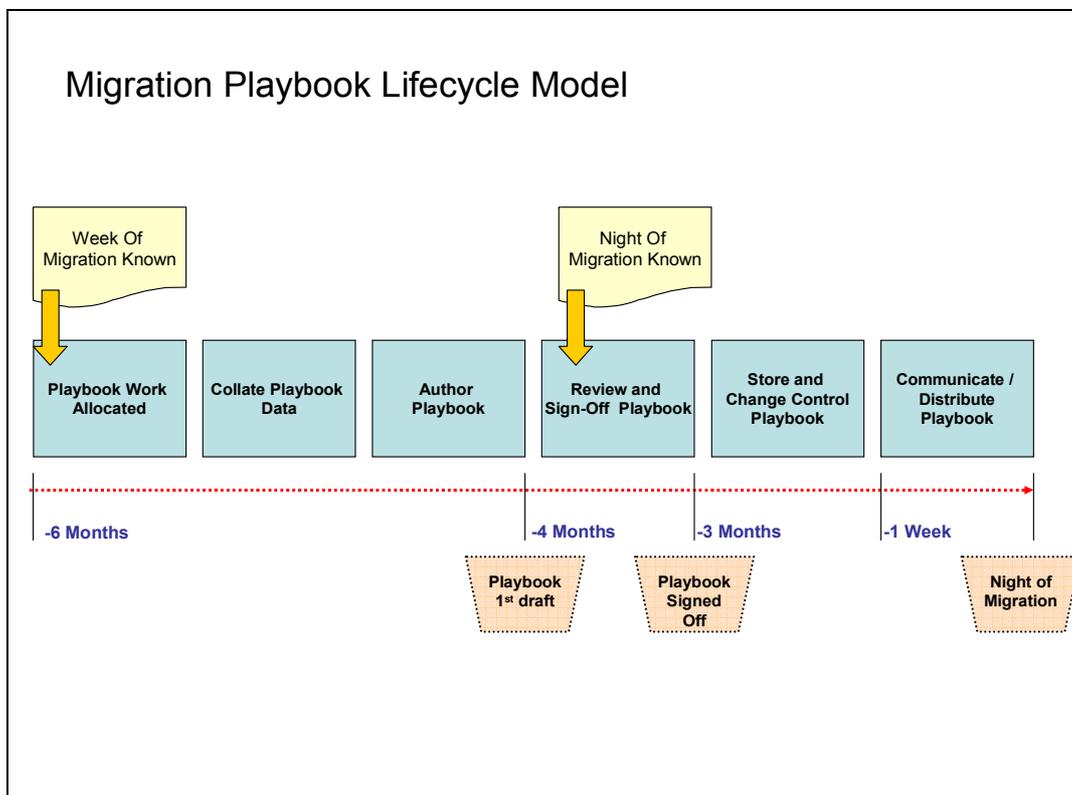
- one technology migration (eg PSTN, ISDN 2 /30, Broadband)
- one DLE (and associated concentrators) or one BB site (and associated MDF's)

A Playbook contains:

- description of the migration site(s), including geographic spread, size of concentrator units & numbers of concentrators within each unit (for PSTN) & numbers of DSLAM's & product mix for Broadband (e.g. IPStream or DataStream)/ MDF, technologies related to the concentrator unit or DSLAM, the number of connections, the connection types, the number of customers including details of the numbers of stopped lines that will be transferring (Spare Plan Margin) & details of the legacy customers that will be remaining on 20CN.
- chronological list of the activities required to migrate a DLE (and its related concentrators) or, in the case of Broadband, DSLAM, from current state, to future state 21CN.
- selected migration method for each physical site (MDF).
- links/references to the procedures to undertake each activity, specific to the technologies and the migration method, within each specific site. These will be specific to the procedure for that site only.
- for each activity, the agreed delivery agent (role and organisation) and the agreed (i.e. mean average) duration.
- number of delivery resources, by role, representing each delivery organisation (e.g. Openreach, Field Engineering, Technical Services, Data Teams).
- activities and duration of physically moving delivery resources between sites.
- physical tools and environmental factors required to fulfil each activity, in each site.
- communications channels used by engineers at each site. There is a baseline assumption that out of area land lines are in each concentrator. Where concentrators do not have an identified out of area line, the engineer will use mobile communications. Where mobiles do not work, an alternative solution will be documented for that specific concentrator for that migration playbook, as agreed with the local field manager.

The MCC is responsible for the full lifecycle management of migration playbooks. The lifecycle of a playbook is outlined in Figure 9, with the purpose of each stage of the lifecycle is defined in Table 2 below:

**Figure 9 – Migration Playbook Lifecycle Model**



**Table 2 – Purpose of Playbook Lifecycle Stages**

Lifecycle Stage	Purpose
Playbook Work Allocated	To manage the efficient distribution of playbooks across the authoring team
Collate Playbook Data	To collate the playbook data from the data stores and field managers to enable authoring of the playbook
Author playbook	The MCC Playbook Author creates the first draft of a playbook against agreed templates
Review & Sign Off Playbook	A one month review process with associated parties, including all internal and external delivery agents
Store & Change Control Playbook	To store the playbook in a document management taxonomy under a change control process
Distribute Playbook	Defines how the playbook is distributed, and through what channels to each delivery agent

Ultimately, the Playbook Lifecycle delivers one playbook per migration timeline, to comprehensively manage one night of migration activity.

**5.1.2 Tactical Resource Models (TRM)**

*Note – organisations/function in this context is referring exclusively to BT resources and does not include any CP resources which may support the migration of end customers or interconnect routes*

The purpose of the Tactical Resource Model is to:

- Inform the ‘on the night of migration’ supporting organisations/functions of the resource requirements expected from them.
- Be used as a tool by the MCC Tactical Resource Planner to agree fulfillment of the required resources.

A Tactical Resource Model (TRM) is defined as being specific to one Playbook (i.e. one migration, for one technology, on one night) and contains the number of resource required from each organisation/function. It defines for each resource the:

- skill set of each resource, required to carry out the activities
- location of the resource at the start, during, and end of the night.
- start times and the anticipated duration of resource requirement.

**Figure 10 - Tactical Resource Models Lifecycle**



**Table 3 - Tactical Resource Models - purpose of each lifecycle stage**

Lifecycle Stage	Purpose
Author Tactical Resource Model	The Tactical Resource Planners author a TRM against the defined playbook
Collate Tactical Resource Models	An agreed period of TRM’s are collated in preparation for resource fulfilment
Undertake Resource Fulfilment Process	The Tactical Resource Planners manage the fulfilment process with internal and external resource suppliers to identify the named resources to fulfil each migration

Ultimately, the TRM’s are used to assign/allocate the named resources to fulfil each night of migration activity.

## 5.2 Migration Timeline Quality Gateways

*Note: Quality Gateways exist throughout a migration timeline and are used by the MCC for management reporting to the CPs - consequently, this information is included to aid understanding.*

### 5.2.1 Definition & Purpose

Quality gateways are:

- a point on the migration timeline that carries significant business risk, and requires review prior to proceeding and / or;
- an organisational change in accountability during the migration timeline

The purpose of gateways is to provide:

- a point of control and review in the migration process.
- BTW with an interception point to halt progression of a timeline

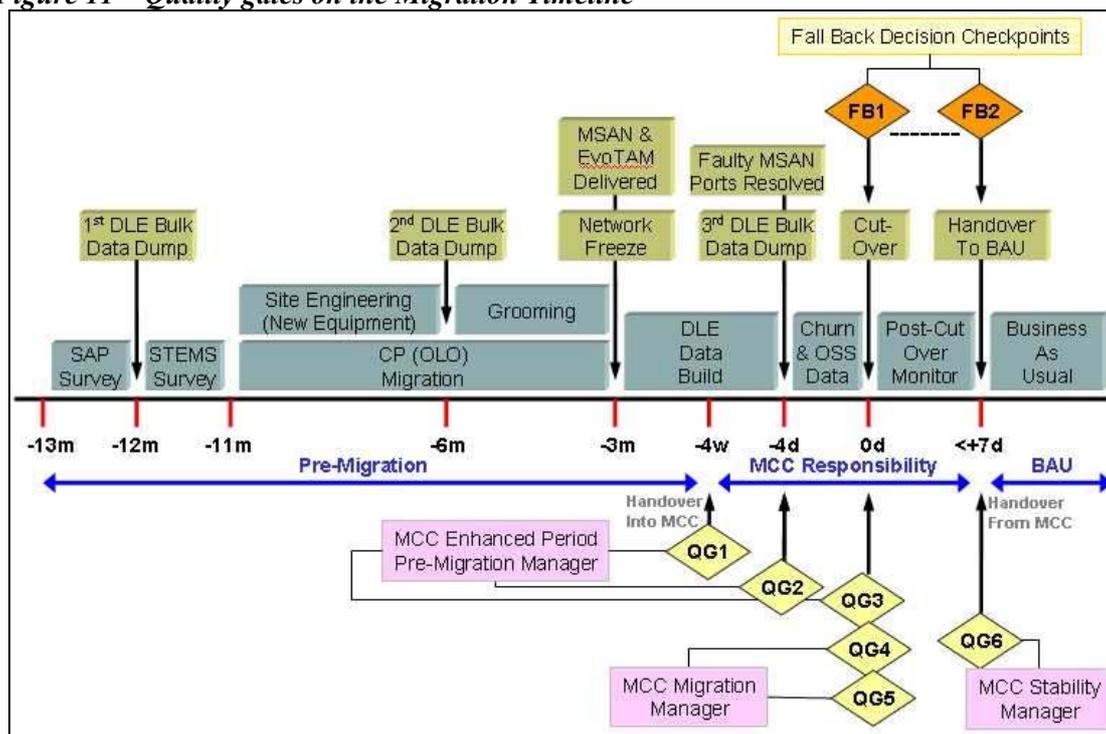
Each gateway will comprise of a checklist of criteria, provided by the associated business units, but managed by the MCC

Areas of the timeline that do not have Quality Gateways defined are still managed through the Pre-migration and Migration management disciplines within the MCC. The Quality Gateways are used as major control points.

### 5.2.2 Quality Gates on the Migration Timeline

There are six quality gateway decisions that require MCC sanction to enable a smooth progression of the migration process and these are illustrated in relation to the PSTN migration timeline in figure 11 below and defined in table 4.

Figure 11 – Quality gates on the Migration Timeline



Quality Gateway Number	Description
1	The handover from the MCC <i>Standard Period</i> Pre-Migration Delivery Manager into the MCC, at four weeks before Cut-Over.
2	The decision to proceed to Customer churn.
3	The decision whether to proceed to ‘On-the-Night’ Cut Over process (am)
4	The decision whether to proceed to ‘On-the-Night’ Cut Over process (pm)
5	The handover from the MCC Migration Manager to the MCC Stability Manager on the Morning after Migration
6	The handover from MCC Stability Manager to Business As Usual Operations

### 5.2.3 Quality Gate Governance

Quality gateways are governed by a set of metric criteria and thresholds which determine the decision to proceed / or not to proceed. For each criteria set, there will be defined:

- description of the criteria
- business unit ‘owner’ of the criteria
- system that holds the criteria
- BAU metric

- threshold of acceptance
- timed availability of the metric measure (in relation to the timeline)

It is the responsibility of the MCC to manage each migration site through each quality gateway until site stability criteria are achieved, and the site is handed back to BAU operations.

Each Quality Gateway is managed by a role within the MCC, depending upon the relative position of the gateway within the migration timeline. The MCC roles managing gateways identified within Table 5 below

**Table 5 – MCC roles responsible for the six quality gateways**

Quality Gateway Number	MCC Managing Role
1	MCC Enhanced Period Pre-Migration Delivery Manager
2	MCC Enhanced Period Pre-Migration Delivery Manager
3	MCC Enhanced Period Pre-Migration Delivery Manager
4	MCC Migration Manager as 3
5	MCC Migration Manager
6	MCC Stability Manager

### 5.3 Migration Control Mechanism

The Migration Control Mechanism Design defines the control and management mechanism that will be used to control an ‘on the night’ migration or transfer

#### 5.3.1 Preparation

There are certain preparation activities that must occur on the night of migration, to enable a successful migration. These are:

- Pre-requisite deliverables are in place and all parties have the correct versions – namely One playbook, tactical resource model and tactical fulfilment information for the site being migrated,
- Ensure that Quality Gateway (on the night go / no go decision) has passed
- Communications are in place via a single conference bridge
- All parties confirm their attendance and report to the MCC Migration Manager.

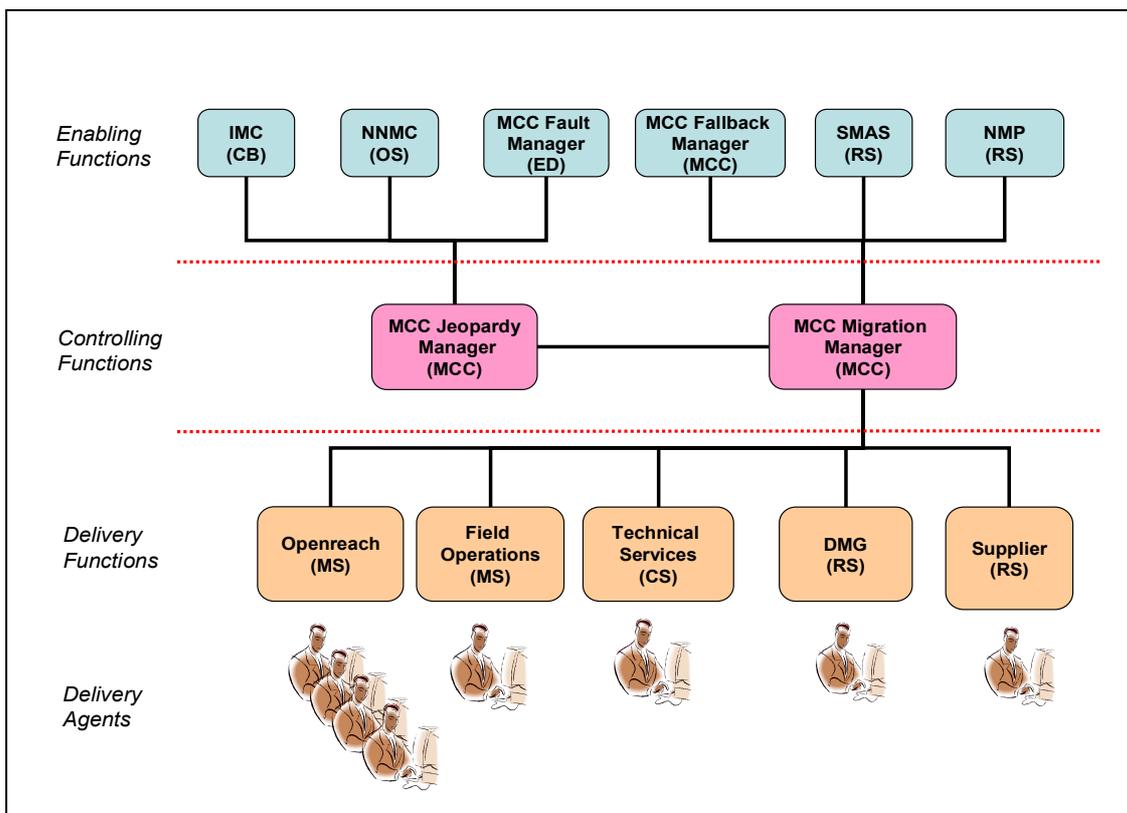
The MCC Migration Manager is accountable for ensuring that the above prerequisite preparation activities are undertaken and completed successfully prior to embarking on a migration.

#### 5.3.2 Migration Control Mechanism Organisation

Figure 12 below defines;

- The organisational hierarchy of an ‘on the night’ migration
- The roles involved in an ‘on the night’ migration
- The function of each organisation (indicated by ‘swim-lane’)
- The geographical location of each organization /function

**Figure 12 - Migration Control Mechanism Organisation by role & geographic location**



**Definitions:**

IMC: Integrated Management Centre  
 NNMC: National Network Management Centre  
 SMAS: Switch Manager Application Support  
 NMP: Network Mediation Platform.

**Location Key:-**

Abbreviation	Location
CB	Cambridge
OS	Oswestry
ED	Edinburgh
RS	Remote Site
MCC	Walsall
MS	Migration site
CS	Migration Call Server
RS	Remote Site

The organisations shown work together as a virtual team, categorised into 4 business functions, defined as;

**Delivery Functions** - those organisations that perform the delivery of tasks within the timeline of activity, during a migration. They are specific to performing activities identified within the migration playbook. The roles and activities performed within the delivery functions are defined within the playbook.

**Delivery Agents** - those personnel that perform the activities within a timeline, and reside within the Delivery Functions.

**Controlling Functions** - ensure all migration activities are completed within the migration timeline. They direct all Delivery Functions and Enabling Functions as to when they perform

their individual activities and confirm successful completion and / or manage jeopardy of tasks.

Enabling Functions - those organisations that perform supporting activities to ensure a migration is managed and controlled.

### **5.3.3 Communications within the Migration Control Mechanism**

To ensure that all functions are available and contactable throughout the night of migration, a conference bridge will be set up by the MCC Migration Manager for the use of those within the Migration Control Mechanism. However, due to the terrain of certain migration geographies, certain functions will use alternate communication mechanisms.

Consequently, channels of communication will be specific to each function. The means of communication from remote concentrator sites will be specified in the migration playbook (eg OOA, Exchange Line/Mobile Phone/Sat Phone) following the playbook data collation which will ascertain what is available and most appropriate to use at each site. The communications channel, on a per site basis, will be recorded within the playbook.

### **5.3.4 Migration Progress Control**

To ensure clear and concise instructions are conveyed and received by all parties, conference bridge setup rules and usage protocol will be observed at all times.

### **5.3.5 Jeopardy Management**

During migration, it is anticipated that various activities will fall into jeopardy. Jeopardy can occur through a number a number of mechanisms, namely;

- Delivery agents raising issues on completion of activities, prior to a duration breach
- Duration of an allocated activity breaching the timeline
- An Enabling Function identifies an activity in jeopardy

BTW's MCC design includes a comprehensive Jeopardy Management process, which defines how activities are managed through to resolution or fallback.

## **5.4 Stability Management**

Following a successful migration, a migration 'site' will undertake a period where site stability is closely monitored before it is handed back to BAU processes for alarm monitoring and fault handling.

After a night of migration (transfers) has been successfully completed, the MCC Migration Manager will hand over the migrated site to a MCC Stability Manager. A successful transfer will achieve the following criteria:

- 21CN is free of major faults
- fault volumes are below the fallback thresholds

The Stability period will commence immediately after transfer (Quality Gateway 5) and continue until hand back to BAU, up to 7 days after migration (Quality Gateway 6).

For the MCC Stability Manager to have a holistic view of any ongoing issues, the MCC Migration Manager will pass the following information onto the MCC Stability Manager:

- Statement of migration success or jeopardy

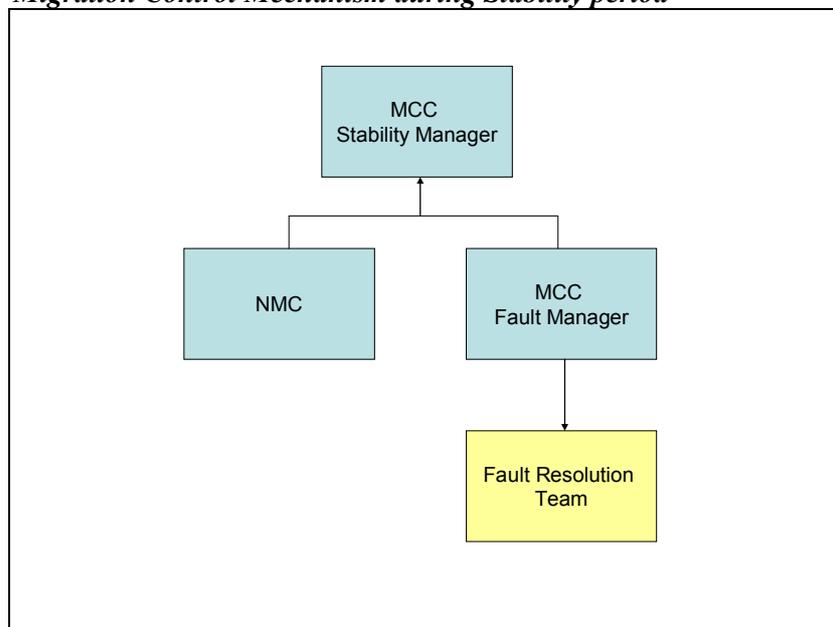
- All ‘on the night’ migration activities completed or in hand
- All ‘on the night’ resources confirmed as signed off (or location – if still on duty)
- Details of any ongoing issues (as contained in Migration Jeopardy Log)
- Details of any known customer faults and the current Migration Fault Fix Team status
- Confirmation of bridge attendees

During the first 48 hours post transfer, the Fault Resolution Team (comprising BTW and Openreach personnel) will remain at the site to resolve fault reports under the management of the MCC Fault Manager.

#### 5.4.1 Communications during Stability Management

During the stability period, the communications conference bridge will be maintained, but with the reduced organisation shown below in figure 13.

**Figure 13 – Migration Control Mechanism during Stability period**



If no major issues are present at the end of the first working day post transfer, the conference bridge will be stood down by the MCC Stability Manager.

Beyond this point, it will be the responsibility of the MCC Stability manager to monitor the current status of the migrated sites during the stability period. The monitoring will be performed against the fallback criteria and where breaches occur the fallback process will be adhered to (see section 6). Throughout this period, the MCC Stability Manager will be in regular contact with the MCC Fault Manager and the NMC’s to ensure the migration sites are under breach threshold and stable.

It is the decision of the MCC Stability Manager to determine when the monitoring data meets the criteria for hand back to BAU. (Quality Gate 6) This should take no longer than 7 days but may be shorter depending on the magnitude of the migration.

**5.5 CP Interfaces (Management Reports)**

<b>Communication</b>	<b>Frequency</b>	<b>Channel</b>
The number and name of migration sites post Quality Gateway 3 (On the Night Cutover)	Nightly, One per migration	Consult 21 Website
The number and name of migrations completing night of migration successfully	One per transfer, at point of last tra migration activity	Consult 21 Website
The number and name of migrated sites being managed within the stability period	Daily	Consult 21 Website
The number and name of migrated sites post Quality Gateway 4 (Handover to Business As Usual)	Daily	Consult 21 Website

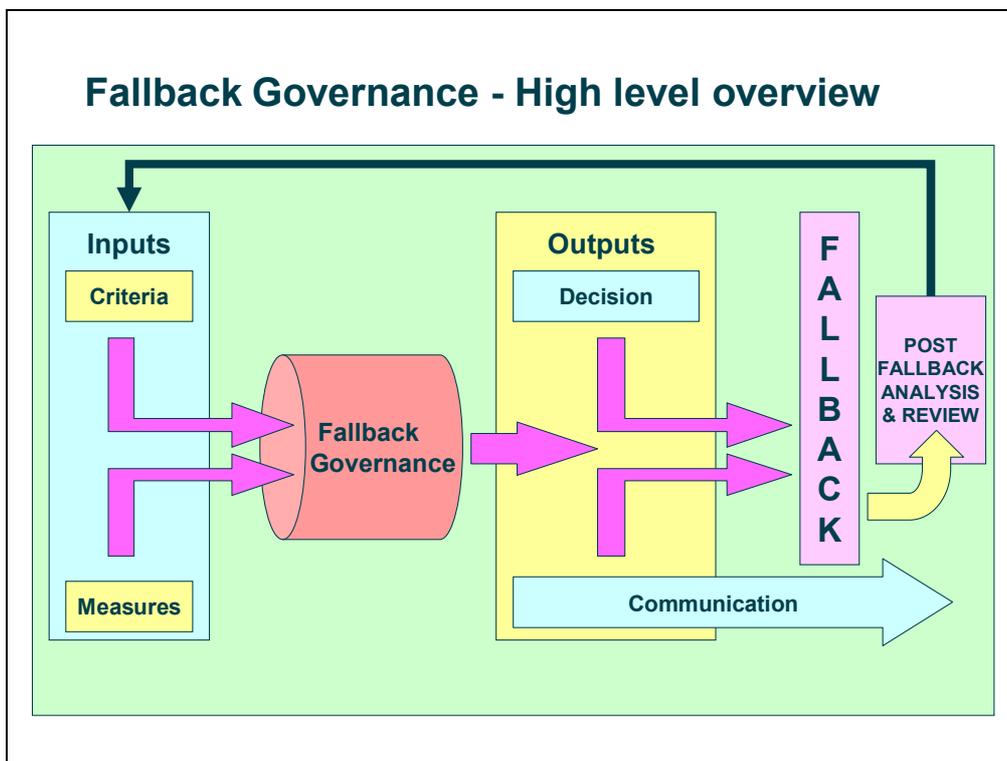
## 6 Fallback Management

CPs contribute to the determination of fallback decisions by continuing to report end customer faults on a BAU basis during transfer and pre-migration activities. BTW communicates via management reports to CPs in the vent of fallback in line with BAU process for serious, major or reportable incidents.

Fallback Management comprises of five main components. These are:

- Stability Criteria
- Measures & Monitoring
- Governance and Decision making
- Communications
- Post fallback review

Figure 13 - Fallback Governance for operation within the MCC



### 6.1 Fallback Principles

#### **Fallback decisions have serious cost, service and brand implications**

A decision to fallback, either during Pathfinder, or during mass migration, will be taken seriously. The impact upon BT Wholesale's customers, end users and BT's brand could be significant if a fallback decision is made in haste, or equally, not quickly enough.

#### **Fallback is almost inevitable during a 4 year programme of significant change**

Preserving quality of service is paramount, but given the leading edge nature of the technology and the capability that will exist to monitor that technology (especially in the early days of Pathfinder), fallback at some stage during 21CN migration is inevitable.

### **Fallback is always the last option in problem resolution**

In the event of a failure or degradation in service, it is important that all options are considered. Initially, if a component or series of components within the 21CN architecture fail, automatic or manually instigated resilience measures would be the first step in resolving the problem. Where this is not possible then a repair would be administered. It is vitally important that in circumstance where a failure has occurred, that evidence of the fault is captured. This would help to ensure that repeated instances of the same problem can be identified and the fault can be replicated by the vendors under lab conditions. Therefore, BTW will endeavor to learn from the experience, and avoid fallback from repeated circumstances.

## **6.2 Fallback Scenarios**

There are three fallback scenarios:

- **Pre-cut-over** - Fallback or Abort before cut-over on the scheduled migration date. This could be initiated at any point in the preparation of migration up until the point at which the Go/No-Go decision is made. Declaration of Fallback at this stage would not have a major customer impact although possibly some preparatory work by either BT Wholesale, it's suppliers or agents, or the Communication Provider community would have to be reversed.
- **During Cut-over** - Fallback or Abort during cut-over could occur if one of the cut-over activities fails. This will have an impact on customer service i.e. a break in service. However, the degree to which customers are affected will depend on the point at which fallback or abort is invoked within the cut-over process i.e. not all customers on a concentrator unit will have necessarily been transferred by the time fallback/abort is invoked.
- **Post Cut-over** - Fallback post cut-over i.e. within the defined migration stability period (nominally 7 days). Both 21CN network and service performance will be under close scrutiny during this period and the stability criteria and measures against which the performance of the 21CN is being assessed will drive any decision to fallback. However, this will only be considered once all other repair/restoration options have been explored. Fallback at this stage would incur significant service outages but this would be acceptable if the performance or visibility of the network was such that Fallback had to be considered.

## **6.3 Stability Criteria**

The purpose of fallback stability criteria is to define the metric criteria that will be monitored by BTW pre, during and post a migration to ensure stability of the technical network, and the services running across it. Stability criteria are required during all three fallback scenarios when a fallback or an abort could be invoked.

Common stability criteria may apply across all three phases or may only apply to one or perhaps two particular phases.

Stability criteria have been broken down into a range of categories. Each category is then subdivided into a number of metric criteria, with associated measures. The following section provides a definition of each stability category:

### **6.3.1 External**

There are a range of external criteria that have to be considered. These cover emergency incidents at both a local or national level, that have a specific impact on BT Group or other

CPs, Examples include extreme weather, terrorists attacks, unexpected power failures, fires or similar incidents that have a geographic impact etc.

### **6.3.2 General network health**

These criteria include any network or serious incidents that are currently being managed by BT or CPs on the migrating platform. This includes any special measures that had been applied to networks or periods of extremely high traffic profiles due to 'telephone voting' activity related to televised events.

### **6.3.3 Component failure**

These criteria will include and cover voice components including routing database, media server, media gateway and call server, transmission and access components, switching layers 2& 3, test capability and transfer engineering systems. The measures will be based upon stability with and dependant upon repair activity being fully explored before fallback is invoked. There is close alignment in this section with the criteria for Go-No/Go.

### **6.3.4 Fault Levels**

Fault level criteria will be monitored during the period of migration. Criteria will include the number of faults and the rate of fault growth.

### **6.3.5 Service Availability**

Service availability defines the end users ability to actually make and receive calls or use a service. BTW will employ a number of measures to ensure service availability is not compromised noting especially the impact any a loss of service could have on end users ability to contact 999 services.

### **6.3.6 Quality of Service (QoS)**

The Quality of Service (QoS) delivered to customers is a key determining factor in the migration to 21CN. The roll of the MCC will be to monitor the QoS measures set and ensure that QoS does not breach an agreed threshold.

The monitoring function of the MCC will be at a dashboard level, relying on existing customer interfaces to provide the key performance measures. These measures will be focused on, but limited to, echo, jitter, round trip delay and other network abnormalities. In addition, the availability of network services such as 1571 and other star service features on the 21CN platform will be a key factor in assessing customer experience. QoS measures will be in place for both PTSN and Broadband.

### **6.3.7 Cutover process failure**

The transfer engineering migration process is complex and particularly intense during the actual transfer window. Specific criteria exist that will be linked to the non-completion of particular functions during a migration.

For example, if signaling monitors have not been applied and Emergency and Critical numbers are not being monitored in advance of transfer to 21CN, this could potentially generate an abort scenario in the 'pre' and 'during' migration phases.

### **6.3.8 Measures & Monitoring**

Against each criterion set is a defined monitoring solution that will be used by the MCC to monitor and assess the thresholds during fallback and stability periods.

The monitoring capabilities span across a number of tools, from network element managers (Net health 21), to fault management systems (CSS) through broadband systems (IVOR). The MCC intends to deliver a ‘dashboard’ system that consolidates the monitoring of data across multiple data sources, and provides a homogenous view of the 21CN metrics. Ultimately, this dashboard will monitor the health and stability of each migration site during mass migration.

### 6.4 Decision Making Process

An effective decision to fallback from 21CN to the legacy network will be dependent upon a number of key elements. There must be a clear understanding of the:

- criteria thresholds that have been breached (which requires an effective monitoring and measures capability)
- the end customer impact of the breach e.g. is it visible to the customer, does the customer base have service etc
- results of any repair activity that has been conducted
- time that has elapsed since the threshold was breached
- accurate prognosis on the duration of the failure if the repair activity is continued
- implications if fallback is invoked in terms of further service outages etc

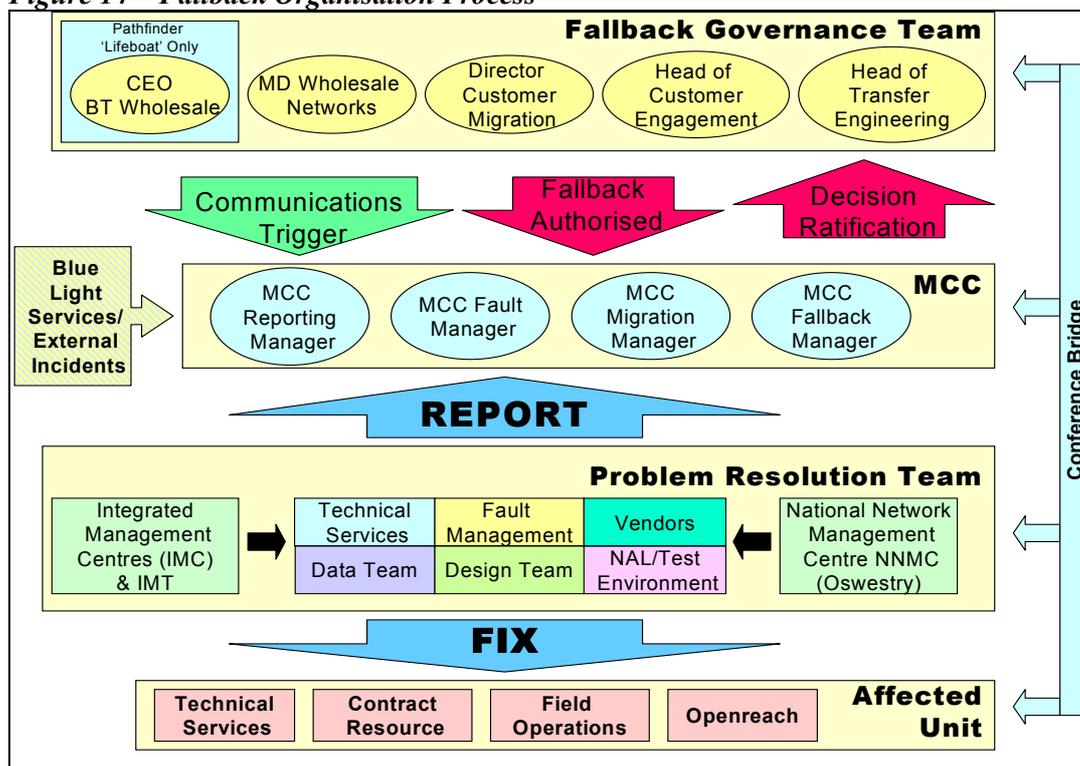
A comprehensive decision making process is in place to manage where a breach of threshold in fallback criteria is identified. The decision process ultimately results in either a decision to continue monitoring, or the decision to fallback.

#### 6.4.1 Organisation

When a stability criteria is breached or an external event occurs that disrupts the normal migration process and requires fallback decisioning, then the proposed Fallback Governance Structure will be initiated, which will manage the Fallback Decision Process.

Figure 14 below defines the Fallback Organisational Structure, and the interaction between the organisations involved in the fallback decision making process.

Figure 14 – Fallback Organisation Process



The roles of each organisation are defined below:

Affected Unit – is the transferring exchange. The resources will be at the dependent and remote concentrator sites and the team will comprise of:

- Technical Services
- Field Operations
- Openreach Resources
- Contract Resource

Within the period of time when an attempt to repair the unit or component is being administered, the need to deploy vendor resource to the site will be considered. The team will be augmented with other resources as the need arises but these will be specified based on the particular type of failure. Consequently, the MCC Fallback Manager will have a defined list of the SLA response times, and 24 hour contact details, per vendor, per component, available.

#### **6.4.2 Collating information**

Problem Resolution Team (PRT) - A decision to fallback or abort will be based on information that is collected and collated by the Problem Resolution Team (PRT). This will be comprised of key teams and individuals that have the technical capability to understand the fault and its central and peripheral impact. These will include:

- Technical Services
- Fault Management
- Data Team
- Design Team
- Vendors
- NAL/Test Team
- IMCs
- NNMC – Oswestry
- Additional Ad-hoc members as required to address the problem/fault

This team will operate at a tactical level and interface with the MCC and the teams that are working at an operational level to restore the affected component or unit. They will direct repair activities and regularly report to the MCC on progress, issues and status.

In order to focus on the parallel activities of identifying a repair solution and managing the fallback process, the PRT will be required to augment resources when a potential fallback situation occurs.

Additional pre-nominated resources will be identified and associated contact details will be included in a Transfer Engineering specific edition of the Personal Emergency Handbook (PEH).

MCC Fallback Team - Within the MCC a team of key people will assimilate the data and information that is reported to them by the PRT or from external sources such as the Blue Light Authorities. The MCC team will be comprised of the following roles:

- MCC Fallback Manager
- MCC Migration Manager
- MCC Fault Manager
- MCC Communications Channel Manager
- The members of teams headed by the roles above
- Ad-hoc membership dependant on the failure

### 6.4.3 Decision Making

The overall authority for managing this process will be the MCC Fallback Manager. This individual will be responsible for making sure that all resolution options have been explored, all available resources brought to bear and an auditable decision tree has been followed in reaching a conclusion that a proposal to fallback or abort has to be submitted to the Fallback Governance Team (FGT).

To MCC Fallback Manager role will be based on a 24/7 rota of three 8.5 hour shifts (this includes half an hour shift hand-over). This arrangement will also be required for the team that will support the MCC Fallback Manager i.e. the Fallback and Stability team.

Once the MCC Fallback Manager is assured that all the facts and data have been collated, he will manage the interaction with the Fallback Governance Team who will decide to fallback or sanction an order to proceed.. The MCC Fallback Manager has custodianship of the migrated DLE between Quality Gates 4 and 6 i.e. from the Go-No/Go decision on the night before transfer, through until the end of the stability period when the unit is handed over to Business as usual operations.

Fallback Governance Team (FGT) - will be comprised of the following roles:

- Managing Director Wholesale Networks
- Director Customer Migration
- Head of Customer Engagement
- Head of Transfer Engineering

Details of all managers with a responsibility within the Fallback Governance process will be included in the Transfer Engineering edition of the Personal Emergency Handbook. This will include work, mobile and home contact details. This document will also include details of pre-nominated alternative contacts that have delegated powers. Where Fallback occurs out of working hours, the FGT will respond on a call out basis.

Both nominated managers and deputies will be briefed on the role and the importance of responding to requests for attendance on the conference bridge that will be used to drive fallback decisions.

In the event of a large-scale fallback decision, the CEO of BT Wholesale will be co-opted into the FGT. This will reflect the added impact from a public relations perspective that a fallback of a large geographical customer base would induce. Equally, if additional representation is required this will be at the behest of the core FGT members.

Communication between these separate elements of the governance structure will be via a permanently open conference bridge. A very strict protocol will be implemented so that only key players contribute to the decision-making discussion. Other teams that have a contribution to make to the process will be asked to participate as required.

It should be noted that situations will arise where decisions on whether to fallback or not will have to be fast tracked. This will occur if the network is not supporting any basic services and key regulatory requirements e.g. the provision of 999 service are not being met. In these instances, it will be necessary for the MCC Fallback Manager to expedite a rapid fallback which will require a decision to be made by the Fallback Governance Team on a reduced portfolio of evidence.

#### **6.4.4 Management During a Fallback**

Once the decision to fallback has been made the MCC Fallback Manager will issue an order to all teams involved in the fallback of a unit to increase resources as required and move to the impacted locations. The MCC Fallback Manager will issue a time by which this has to be achieved and will request that all team leaders join a call at a pre-designated time to confirm that resources are in place and ready to fallback. This will cover resources at the site, the Problem Resolution Team, and remote teams that are acting on the orders of the appropriate representative within the PRT e.g. the data team, vendors etc.

The MCC Fallback Manager will establish a regular dialogue via the conference bridge, which will be populated with a refreshed team of resources that will be focused on the implementation of fallback. This team will consist of

- MCC Fallback Manager
- Network Management Centres
- Technical Services (at the affected site or at a remote location with links to the affected site)
- Managers of the Contract, Field Operations and Openreach resource
- Systems Reps – to re-set systems
- Jeopardy Manager
- Fault Manager
- Vendors
- Additional representation of teams as required

The MCC Fallback Manager's role in the management of fallback will be to manage fallback but not to implement the fallback procedure. The purpose of the role is to manage the delivery teams who are implementing the procedure. The primary focus of the role is to:

- Manage the conference bridge to ensure that those that are implementing the fallback procedures are doing so in a coordinated and concerted manner
- Manage any escalation either from the team implementing fallback or from external sources supporting that process.
- Maintain a level of urgency, focus and manage the overall end to end timing of fallback
- Manage the situation reporting of the fallback and ensure that the MCC Reporting Manager has sufficient information to minimise reactive communications.
- Coordinate requests for any additional resource or additional support teams.
- Keep the MCC Migration Manager and the FGT informed of progress at regular intervals (default is 30 minute updates)
- Manage inputs and information from the PRT as it addresses the problem.
- Maintain a duty of care for the resolution team
- Initiate a command on TEWT (Transfer Engineering Workflow Tool) to indicate that Fallback has been invoked, ensure the re-setting of TEWT post fallback, management of churn logs, and the changes that need to be enacted on VDMT, BDDMT and all other TE tools.

#### **6.4.5 Post Fallback Review**

When a successful fallback has been achieved, the MCC Fallback Manager will initiate a Fallback Review, which will include:

- An analysis of how effective the process was
- Issues encountered during resolution
- Quality of communications both internal and external
- Resourcing issues

- System issues
- People issues

The MCC Fallback Manager will also instigate a Failure and Post Fallback Investigation that will include a technical analysis of the incident. This will rely heavily on the work completed and information captured by the Problem Resolution Team. The recommendations of the Review will be incorporated into processes, procedures and technical fixes of hardware and software.

## **6.5 CP Interfaces during Fallback**

During a fallback, abort or repair scenario, the demand for relevant and frequent information from CPs, the Emergency Services and the organisation established to deal with end user communications, could be significant. This is in addition to BTW internal communications including two-way dialogue with the migration teams deployed in the field i.e. process driven communication.

To ensure effective management of the fallback process as outlined within this section and to enable full focus to be given to problem resolution or enacting fallback as appropriate in order to minimise further impact on end customers, the MCC design for Fallback Management includes a defined Interfaces and reporting for CPs in the unfortunate event of fallback. Within this design communication of information will be in a range of formats, be proactive and reactive, written and oral, delivered via the web for general consumption or directly to a specific team or individual.

The MCC Fallback Manager will aim to maintain a proactive stream of information from the organisation that is either managing the repair, deciding on fallback or implementing fallback.

It is important that there is consistency between proactively distributed messages and the reactive dialogue that will follow to check for understanding and gain more detail. Mixed messages will impact the credibility of the process, waste time and cost money.

### **6.5.1 Roles**

In the case of Fallback, the MCC Fallback Manager will work closely with the MCC Reporting Manager. Each Reporting Manager will have a responsibility for a channel or number of channels and will be required to ensure that communications are aligned to the 'one truth' updates that will be provided by the MCC Fallback Manager and his team.

External communications concerning the general state of 21CN migration and the impact of any fallback on end customers will be directed via the MCC Reporting Manager.

### **6.5.2 Communications Format**

Communications to organisations, teams or individuals will be issued in a template that identifies:

- Current status
- Key issues
- Potential customer and end user impacts
- Progress on previously communicated actions
- Contact details
- Date stamp
- Distribution

This approach is in line with BTW established approach for major, serious and reportable incidents with which CPs will be familiar.

There are four reports types (defined in Table 6 below) targeted at the Communication Provider community, which are authored and distributed at defined points during the Fallback process.

**Table 6 – CP Fallback Reports definition and distribution timeline**

<b>Report No.</b>	<b>Content</b>	<b>When</b>
<b>2</b>	<b>Non technical –</b> <ul style="list-style-type: none"> <li>• Details of affected unit, location, number ranges affected, number of customers likely to fallback.</li> <li>• Content will include first alert of potential fallback/abort.</li> </ul>	Pre-Fallback (Alert)
<b>4</b>	<b>Non Technical -</b> <ul style="list-style-type: none"> <li>• Declaration of fallback</li> <li>• Update based on Impact Assessment</li> <li>• Includes timescales for Fallback including start of fallback process</li> </ul>	(1) Pre Fallback – Decision Made - Fallback Declared (2) Fallback commenced
<b>6</b>	<b>Non Technical -</b> <ul style="list-style-type: none"> <li>• Declaration of fallback start</li> <li>• Current status</li> <li>• Customer impact and service outages</li> </ul>	Fallback in progress
<b>8</b>	<b>Non technical -</b> <ul style="list-style-type: none"> <li>• Progress update</li> <li>• Summary of refreshed of impact assessment</li> <li>• Declaration of Fallback Completion as appropriate</li> </ul>	Fallback Completed

*Note: The numbering reflects a much larger chain of reports, not all of which are shown as not all are pertinent to the CP audience*

### **6.5.3 Management Reports**

In addition to reports generated and communicated during a migration, the following management reports are communicated to CP's, as part of the Fallback Management function.

<b>Communication</b>	<b>Frequency</b>	<b>Channel</b>
The number and name of migration sites within the fallback window	Daily, list updated per migration	Consult 21 Website
The number and name of sites post fallback period, passed successfully	Daily, list updated per handover	Consult 21 Website

## 7 Fault Management

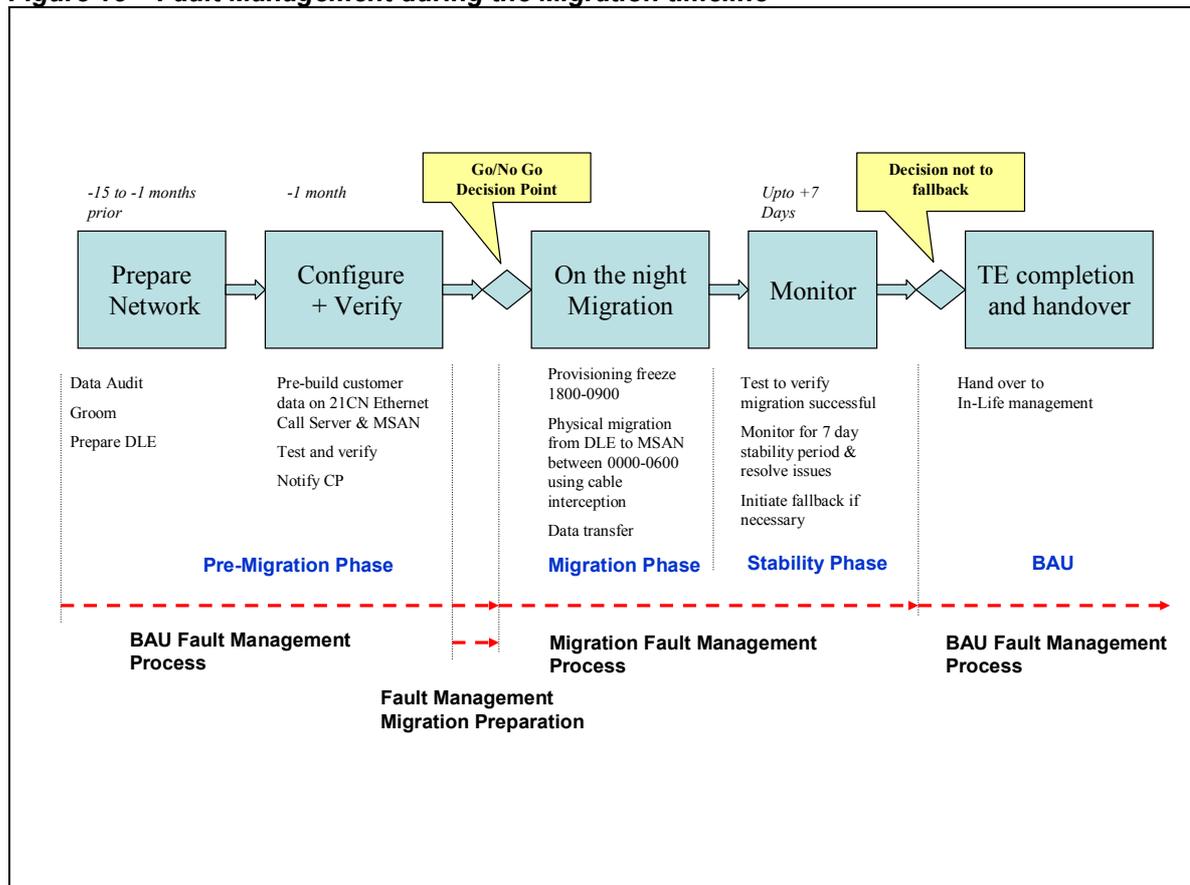
Figure 15 below illustrates the transfer engineering process/the timeline for migration and the associated migration phases and confirms the BTW fault management processes that will run through each phase of migration.

For the avoidance of doubt there is no impact or change to existing CP interfaces or processes for fault management or reporting at any point on the migration timeline.

BTW anticipates that on a per migration, per site basis, the fault volumes for PSTN, ISDN 2/30 and Broadband will rise slightly for the phases of migration and initial stability.

Faults resolution will be prioritised according to BAU criteria by the MCC Fault Manager.

**Figure 15 – Fault Management during the Migration timeline**



### 7.1 Pre-migration Phase

The Pre-migration Fault Management period is defined as the start of a timeline to the night of migration. The principles of Fault Management during this period are defined below;

- The Fault Management Teams will deal with fault reports as Business As Usual during the period of pre-migration. There will be no change to existing process, roles or responsibilities within the boundaries of the Fault Management work areas.
- The MCC Fault Manager will collate all appropriate data on a per DLE or DSLAM basis to enable base line measures for fault reports to be produced for a period of 6 weeks prior to migration. This data will be used to feed the Fault Management Planning process.
- It is the responsibility of the MCC Fault Manager to identify the fault criteria defined with Quality Gateway 4 per DLE or DSLAM and input this information to add to any other collated information with regards to the go/no go decision for migration of the DLE or DSLAM.

- Input for go/no go decision from the Fault Management Team will be communicated to the MCC Gateway Manager on the conference bridge. The criteria for this decision in relation to Fault Management will be made after a check of all outstanding fault reports on the DLE or DSLAM is made to ensure that volumes do not exceed the average daily volume for the past six week measurement.

## 7.2 Fault Management Migration Preparation

The following activities will be prepared 4 hours in advance of the start of a migration. This work will be managed and accounted for by the MCC Fault Manager, utilizing the delivery resources within the Fault Management Team, Edinburgh. The tasks will be tracked at a management level through TEWT.

The MCC Voice Fault Manager will ensure that;

- The automated diagnostic and resolution tools for the area of migration is disabled, to prevent fault reports being progressed and scheduled via the automated work scheduling tools
- FastQueue searches will be created to reflect the migration range
- A named resource will be allocated within the Fault Management team to manage the migration site FastQueue
- The MCC Fault Manager to confirm with the MCC On the Night Gateway Manager that all Fault Management Planning activities have been completed 1 hour before migration.

## 7.3 Migration Phase

As already outlined, the MCC Fault Managers will participate on the migration “conference bridge” call during migration (Transfer). Participation in this bridge gives early notice of any alarms/outages from BTW’s Network Management Centres (also on the bridge) which are likely to have an impact on Customer service.

Fault report levels (number and type of faults) will be monitored throughout this period and reported to the “bridge” every two hours. Where there is any significant change in report levels, an immediate report will be made to the MCC Migration Manager and MCC Fallback Manager.

Faults will be corralled by the MCC Fault Manager, prioritised, and resolved using on site resources, as the migration activity permits. This “manual process” enables:

- MCC Fault Manager to have an “up to the minute” view of fault report volumes.
- On-site engineer can be tasked with multiple faults and therefore negate the need for Workmanager to collate and manage same site reports.
- Fault Reports will be executed (EXE) in the appropriate CSS FMT queue and populated with the Engineer’s i.d.
- Fault reports not related to migration will remain BAU.
- Migration related faults will be jeopardy managed by one team. i.e. the Fault Management Team, working with the MCC.

The overriding factor in fault report handling and progression during this migration period is that there will be no faults progressed through Workmanager to the Field Force.

## 7.4 Stability Period

The role of Fault Management within the stability phase is to;

- (1) Continue monitoring, and reporting the faults levels for a migrated site.
- (2) To repair the outstanding faults within the FastQueue workstack.
- (3) To return to a BAU Fault Management process as soon as possible.

### 7.4.1 Fault Monitoring and Reporting

The MCC Fault Manager will be responsible for monitoring and reporting fault report levels for each individual site to the MCC Fallback Manager, for the entire period of stability. The frequency of this reporting will be 1 report every 4 hours, unless fault volumes rise

dramatically, in which case the MCC Fault Manager will inform the MCC Fallback Manager immediately. Fault volumes will be recorded on a standard template for audit purposes.

### 7.4.2 Fault Resolution

Fault resolutions will be dealt with through 4 key areas of skilled resource.

- Edinburgh Fault Management Team
- BT Wholesale Core Field Teams
- Openreach Field Teams
- BT Wholesale Data Configuration Teams.

These teams will be managed as a single entity Fault Resolution Team by the MCC Fault Manager for the first 48 hours of the stability period. After 48 hours, the BAU fault management process will become active, and will resolve defects within the migrated site.

### 7.5 Fault Measurement

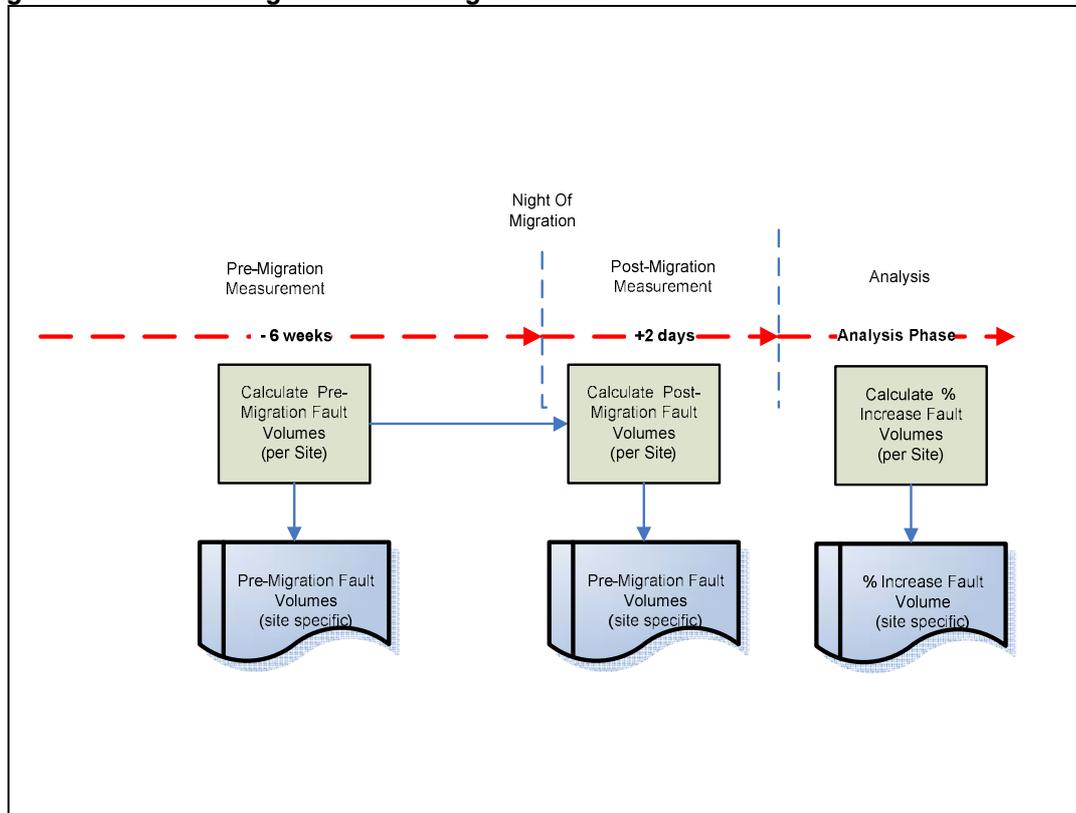
As part of management reporting, the MCC must inform the CP's of the increase in number of faults on a per DLE basis, based against known metrics. This report informs the CP's of the revised fault reception forecast volumes, which are required to help determine the resource levels for service desks at first line.

These planning activities help BT and the CP's prepare to operate (and to continue to verify that plans are appropriate) during the 4 year period of mass migration.

As illustrated in Figure 16, it is the responsibility of the MCC Fault Manager to;

- Calculate the revised volumes, on a per site basis
- Pass the revised volumes (as a % increase in volume on that site) to the MCC Reporting Manager

**Figure 16 - Fault Management Planning Overview**



A percentage increase to fault volumes, on a per site basis is calculated by the MCC Fault Manager as follows:

### **7.5.1 Pre-Migration Measurement**

The MCC Fault Manager will be responsible for authoring a Pre-Migration Fault Volumes report for each migrating DLE, associated concentrators or DSLAM. The analysis is performed from 6 weeks out, through to the night of migration.

- The report provides the level of faults, per DLE, Concentrator or DSLAM prior to migration.
- The Voice report will cover a period of 6 weeks prior to the day of migration. The data to calculate the measurement for Voice is sourced from a Business Objects query to the Call Data Store (CDS). The query is bounded by the Directory Number range or A1141 code.
- For Voice, only fault reports which have dwelled within the CSS Main Fault Location of EX will be taken into account for this analysis.
- Any Major Service Outages relating to the legacy network DLE will be excluded from analysis.
- A legacy “switch fail” will not be taken into account when attempting to project fault report volumes in the 21CN network.
- Up to date Voice Customer Base can be accessed via the BT intranet on the following URL (<http://uknmc.nat.bt.com/sid/>). This website will provide both DLE and concentrator Customer Base size.
- The % number of faults, per exchange line, within a DLE is calculated using the following formula;

$$\frac{\text{WEEKLY FAULT REPORTS ON DLE}}{\text{DLE CUSTOMER BASE}}$$

- The % number of faults, per exchange line, within a Concentrator is calculated using the following formula

$$\frac{\text{WEEKLY FAULT REPORTS ON CONCENTRATOR}}{\text{CONCENTRATOR CUSTOMER BASE}}$$

- The % number of faults, per Broadband connection, within a DSLAM is calculated using the following formula;

$$\frac{\text{WEEKLY FAULT REPORTS ON DSLAM}}{\text{DSLAM CUSTOMER BASE}}$$

The output deliverable is a site specific Pre-Migration Fault report, that contains the % number of faults, per exchange or DSLAM connection, for the 6 weeks leading up to migration.

### **7.5.2 Post-Migration Measurement**

The purpose of Post Migration Measurement is to calculate the site specific, fault volumes occurring on a per connection basis during the migration phase. This includes both BAU faults and migration introduced faults.

The data to calculate the post-migration report follows the same process as defined for Pre-Migration Measurement. Customer fault report volumes are recorded and reported to the MCC Migration Manager by the MCC Fault Manager every two hours from the start of migration to midday on the day of changeover and twice daily thereafter. (09:00 and 16:00) until the announced end of the stability period.

For the purposes of calculating the post-migration measurement fault volumes, the period of reporting used will be +2 days from the start of migration.

The output deliverable will be a site specific Post-Migration Fault Report, that contains the % number of faults, per exchange connection, for the 2 days post migration start.

### **7.5.3 Gap Analysis**

To calculate the Fault Volumes during a migration, the MCC Fault Manager must use the following formula;

Fault Volume % (increase / decrease) due to Migration =  $\frac{\text{Post-Migration Fault Volumes (\%)} - \text{Pre-Migration Fault Volumes (\%)}}{\text{Pre-Migration Fault Volumes (\%)}}$

This will be performed on a per site basis, +3 days after migration. The output deliverable is a % Increase Fault Volume report, specific to one migrated site.

### 7.6 CP Interfaces for Fault Management during the migration timeline

The MCC Fault Manager will 'bundle' one months reports into a consolidated Migration Fault Volumes report, on a monthly basis. The purpose of this report is to inform both BT service desks and CP service desks of the mean average % increase / decrease experienced so far, during migrations. Assuming that 1 migration occurs, per day, and that there are 20 working days in a month, the mean average, per month, will consist of volume data from 20 forecast sites. This enables:

- both BTW and the CP's to have an increasingly accurate forecast of the fault volumes that are likely to arise from a migration.
- the MCC Fault Manager will communicate the monthly Migration Fault Volumes report to the MCC Reporting Manager. It is the responsibility of the MCC Reporting Manager to communicate these revised forecast volumes to the CP's.

The above report is included in the management reports resulting from the Fault Management business function;

Communication	Frequency	Channel
The number of faults raised by CP's, relating to a migration number range, during a migration	Daily	Consult 21 Website
The number of faults resolved, relating to a number range, during a migration	Daily	Consult 21 Website
The number of faults raised during a migration, relating to a migrated number range, resolved within SLA	Daily	Consult 21 Website
The number of faults raised during a migration, relating to a migrated number range, resolved outside SLA	Daily	Specific per failed fault, per CP, as per the BAU process
The number of faults raised due to migration activity, within a number range	Monthly	Consult 21 Website

## **8 Order Fulfilment**

Will be added at Issue 1.1

## 1. Annex A – Gap Analysis CP Requirement captured through consultation

Date raised	Ref No	Requirement	Fulfillment
17.01.05	MCC/001	There needs to be alignment and consistency between the communication structures for Command & Control and those required by the Communication Working Group	Fulfilled
17.01.05	MCC/002	BT needs <b>(is required)</b> to specify the proposed day of transfer as early as 2 -3 months in order to enable that the CP can meet their SLA to their customers. <b>For major customers with network implications, this would need to be a minimum of 6 months warning.</b>	Fulfilled
17.01.05	MCC/003	If changes to the schedule are made the dates may be pushed back but not bought forward. Need to qualify this statement. <b>This may not be true or commercially sensible if a CP or even BTW wants to move a migration forward for an exchange or exhnages which are more than 6-12months away</b>	Fulfilled
17.01.05	MCC/004	Any change to the proposed date of transfer should be notified to the CP so that there is min of 1 week max 30 days between notification of change and transfer date. <b>1 weeks notice will be too short for major customers - suggest the minimum should be 30 days. Quality Gates as mentioned in MCC/009 should minimise this risk.</b>	Not fulfilled - changes will be a minimum of 3 weeks to allow for the minimum period to raise changes. A maximum limit is not set, as it is the schedule rule sets that will determine the reset date, and a maximum period is not a prerequisite rule with any value.
17.01.05	MCC/005	The Work Schedule provided should clearly identify the services or services being transferred on that date - <b>Additional requirement PSTN/Broadband/Alarm Line Split.</b>	Fulfilled
17.01.05	MCC/006	CP's would like to have input to what time of day ISDN services are migrated in order to prevent unnecessary penalties for ISDN outage. <b>To incorporate engineering visits as required.</b>	Out of MCC scope - passed to ISDN transfer method designer
17.01.05	MCC/007	Periods of low network activity for CPS may be different to BTs and hence they would like to be included in the decision on what hour a DLE is migrated.	Not Fulfilled - It is not possible to vary the migration time based on a single CP's need. Current intention is for standard hours to apply.
17.01.05	MCC/008	The information provided should be in common agreed language and go down to Number Ranges being migrated.	Partially fulfilled - Current proposal is to provide 1141 codes (DLEs & conc units) & that CPs need to do the translation.
17.01.05	MCC/009	The timings/criteria for the go/no go decisions needs to be set and agreed. <b>This needs to be expanded to include Quality Gates - timing and criteria. This must be linked to known dependencies.</b>	Fulfilled
17.01.05	MCC/010	Migrations should avoid CP's Shift Change overs where possible	Not Fulfilled - Impossible to achieve this, standard times will apply.
17.01.05	MCC/011	Some CPs would consider that they assume a "go" decision unless they hear otherwise - <b>Additional Requirement Formal "GO" comms required</b>	Fulfilled
17.01.05	MCC/012	CP's would want real time updates that a "go" has been taken and the result Migrated/WIP/Regressed - i.e. there are specific "messages" or checkpoint that are reported against during the migration period. The methodology(ies) for these quality gates need to be understood	Fulfilled
17.01.05	MCC/013	CPs require BT to differentiate between BAU PEWs and Migration activities	Fulfilled

Date raised	Ref No	Requirement	Fulfillment
17.01.05	MCC/014	CPs require to be involved in the development and agreement of the decision criteria to fallback. This is very important for centralised control centres for specific applications & products.	Fulfilled
17.01.05	MCC/015	There needs to be a hotline number for escalations where the MCC cannot be contacted - <b>This needs to be expanded to cover the whole escalation process which needs to be defined, agreed and published.</b>	Partially Fulfilled - a dedicated phone number will exist for critical numbers, but not CP's. CP's will continue to interface to BT through their normal channels for fault reporting including for escalations
17.01.05	MCC/016	Some CP's would prefer BT to avoid weekend migrations as their staffing levels are lower.	Not Fulfilled - This cannot be guaranteed but any changes would be agreed through the Change Request process.
17.01.05	MCC/017	CPs need to be aware if any CRs have been raised by another CP against scheduled dates	Fulfilled
17.01.05	MCC/018	There is a requirement for a process whereby CP's can identify to BT that their Reporting/Management Centres (for migration) may be impacted by a migrating DLE so that "special" arrangements can be made when their parent DLE is being migrated appropriate - <b>This also applies to BT's 100/150/151 etc. services, such as alarm centres and payphones.</b>	What process is it that CPs would like to see in place to meet this concern
17.01.05	MCC/019	CP's would like a defined and agreed fault reporting process for the migration period inc criteria and process for fault diagnostics including those for complex/business/priority end customers.	Fulfilled
17.01.05	MCC/020	CPs and BT need to develop an understanding of how to diagnose a fault, IE is it migration or BAU fault, closer co op required.	Fulfilled
17.01.05	MCC/021	Service Providers who are not LLU and not Interconnected need access to the Migration schedule information	Fulfilled
17.01.05	MCC/022	A database of CP Interface points needs to be established by BT for use by the MCC including a process for CP's to keep BT informed of any changes or updates	N/A - info will be distributed by website and contact points will be same as BAU
17.01.05	MCC/023	Diagnostic support from BT is required for CP service desks to aid fault end Customer fault resolution.	Not Fulfilled - BT will not provide additional diagnostic support over and above BAU at 1st line
17.01.05	MCC/024	Any system or process which is used to support MCC processes/activity needs to be fully tested to ensure it will work during migration to 21cn	Fulfilled
17.01.05	MCC/025	The quality, timing and availability of information for CP's needs to be consistent regardless of the channel that it is used to deliver it	Fulfilled
17.01.05	MCC/026	The service levels (for the migration period) including response times need to be understood by CPs and BT	Fulfilled
17.01.05	MCC/027	A review of current Management Information is required in order to see whether will meet the needs CP's during migration. Agree a common set of standard reports for CP's plus any CP specific reports.	Fulfilled
17.01.05	MCC/028	CPs would like the MCC to be available 24x7 and be resilient.	Fulfilled
17.01.05	MCC/029	CPs would like the MCC to be manned with knowledgeable people who understand 21CN	Fulfilled
17.01.05	MCC/030	MCC to be ready for grooming period to enable CP's to understand when grooming and compression activities are proposed to take place	Fulfilled
17.01.05	MCC/031	CPs continue to own the end user relationship throughout migration.	Fulfilled

## Annex B – Sample PEW dataset

BT Wholesale - Broadband Planned Works

---

**PEW Manager - Automatic Mailer**

**\*\*\* PLEASE DO NOT REPLY TO THIS E-MAIL \*\*\***

**Please direct any queries regarding this email to your Account Manager.**

**05/06/2006 08:45**

---

Dear Customer

This communication is to notify you that Planned Engineering Work is required to be carried out on BT Wholesale's Broadband Network

The work involved is necessary; please see statement of work for End User outage.

**BT PEW Reference No: PW034339**

**Planned duration details:**

**Planned start:** 16/06/2006 05:30

Planned finish: 16/06/2006 07:30

**End User Impact Statement:**

A statement and impact to End User for the work being undertaken is shown here:

This Planned Engineering Work is required to replace a BT Exchange system card which is running at risk. There will be an outage of approximately 10 minutes to end-users within this period. Details of your End Users affected are available on Broadband Customer Reporting.

British Telecommunications plc  
Registered office: 81 Newgate Street London EC1A 7AJ  
Registered in England no. 1800000

This electronic message contains information from British Telecommunications plc which may be privileged and confidential. The information is intended to be for the use of the individual(s) or entity named above. If you are not the intended recipient, be aware that any disclosure, copying, distribution or use of the contents of this information is prohibited. If you have received this electronic message in error, please notify us by telephone or e-mail (to the number or address above) immediately. Activity and use of the British Telecommunications plc E-mail system is monitored to secure its effective operation and for other lawful business purposes. Communications using this system will also be monitored and may be recorded to secure effective operation and for other lawful business purposes.

**END**