

Final report for Openreach

Fixed Access Market Review

23 May 2013

Rupert Wood, Gareth Williams

Confidentiality notice

- This document and the information contained herein are solely for the use of Openreach. Permission is granted for Openreach to include this report in full in its submission to Ofcom as part of Ofcom's Fixed Market Access review, subject to the terms and conditions agreed between Analysys Mason and Openreach
- Copyright © 2013. Analysys Mason Limited has produced the information contained herein for Openreach. The ownership, use and disclosure of this information are subject to the Commercial Terms contained in the contract between Analysys Mason Limited and Openreach

Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI Analysis

Openreach requested SLA/SLG data be collected for a number of copper and fibre products and activation/repair and customer experience KPIs

- On 9 November 2012, Ofcom published its call for inputs for the fixed access markets review. As part of its response to Ofcom, Openreach wanted to provide a comparison of the service level agreements ('SLAs') and service level guarantees ('SLGs') in the UK and other similar European countries.
- Openreach wanted SLA and SLG information collection for the following products:
 - WLR (or local equivalent)
 - LLU (MPF and SMPF)
 - FTTC/P Generic Ethernet Access and equivalent products (VULA)
 - ISDN 2
 - ISDN 30
 - Physical Infrastructure Access (PIA)
- Openreach also requested details of incumbents' performance KPIs, to determine whether activation and repair and customer experience measures were adversely affected by the weather.
- Openreach requested that the following KPI data was collected:
 - activation and repair performance against SLA
 - Average lead times to activation and repair
 - Percentage of lines installed/repaired on time
 - Customer experience measures
 - Number of faults by access line type
 - Mean time between faults by line type
 - Percentage activations and repairs
 - Percentage repeat faults by line type

We have collected SLA/SLG for 13 countries and KPI data for six countries

Countries in scope

Openreach wanted SLA/SLG and KPI data collected for the following countries:

- Austria
- Belgium (KPI data collected)
- Denmark (KPI data collected)
- France
- Finland (SLA/SLG information not collected)
- Germany
- Ireland
- Italy
- Netherlands
- Norway (KPI data collected)
- Portugal
- Spain (KPI data collected)
- Sweden (KPI data collected)
- United Kingdom

Approach to project

- Task 1 – Kick off meeting
 - We held a kick-off meeting to discuss the purpose of the project, the importance of the products in scope, the template used to collect the SLA/SLG data.
- Task 2 – data collection
 - We agreed the format of a template to collect SLA/SLG data.
 - We collected publicly available SLA/SLG and KPI data from operator and regulator websites.
- Task 3 – draft report
 - We have produced a draft report (this document), comparing, on a product by product basis, the SLAs and SLGs and KPIs for each country.

Contents

Introduction to project, objectives and approach

Executive summary

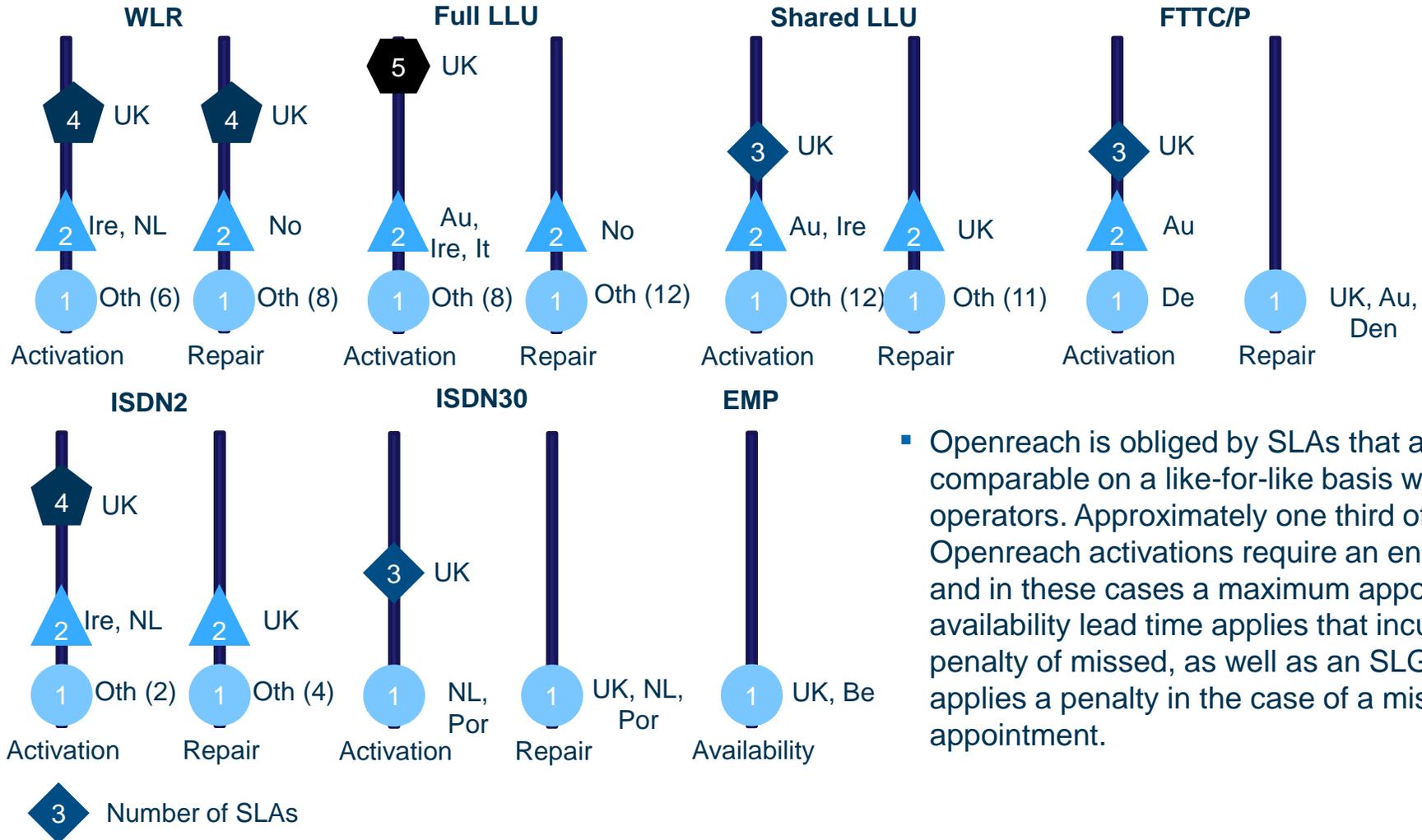
SLA and SLG analysis

KPI analysis

Executive summary: Openreach SLAs and SLGs are generally mid-range when compared on a like-for-like basis with those of other operators

- While there is a wide variety of approaches on SLAs and SLGs, the results of our benchmarking exercise indicates that Openreach SLAs and SLGs, where they can be compared on a like-for-like basis, are generally mid-range between the liberal basic regimes that apply to Nordic operators and the more punitive frameworks that apply to for example A1 Telekom Austria and Portugal Telecom.
 - WLR activation: Among operators that have 100% achievement targets, Openreach has the highest penalties
 - WLR repair: Openreach is stricter than the average for repair SLAs and penalties
 - Full LLU/MPF activation: Openreach's SLA and SLG are comparable to the average
 - Full LLU/MPF repair: Openreach's SLA and SLG are comparable to the average
 - Shared LLU/SMPF activation: Openreach's SLA/SLG is quite stringent
 - Shared LLU/SMPF repair: Openreach's SLAs are comparable to the average, but penalties are relaxed
- SLA targets of under 100% are commonplace among operators other than Openreach in WLR, LLU and shared LLU. Sliding SLA targets (e.g. 80% with x days, 90% within y days) are common, and in some cases fall well short of 100%.
- Operators have differing approaches to provisioning times. It is common in Europe for a maximum overall elapsed provisioning time for WLR, LLU and shared LLU to be set, although the duration varies greatly. Openreach has an approach that involves different SLAs that serve to guarantee performance with respect to an agreed activation date. However, in the third of activations that require it, Openreach sets a maximum appointment availability lead time SLA for engineer visits. For other order types there is no maximum lead time, but typically other factors control the lead time: e.g. activations and transfers cannot, because of consumer protection imposed by Ofcom, be conducted until a cooling-off period of 10 days has elapsed.

Openreach provides more SLAs than all other operators



- Openreach is obliged by SLAs that are not comparable on a like-for-like basis with other operators. Approximately one third of Openreach activations require an engineer, and in these cases a maximum appointment availability lead time applies that incurs a penalty of missed, as well as an SLG that applies a penalty in the case of a missed appointment.

Most SLAs and SLGs compensate not only for spend on non-functioning services, but also for lost revenue and/or goodwill from end-users

- Most incumbents, including Openreach, have SLAs and SLGs are set at levels that serve to compensate not only for spend on non-functioning services, but also for lost revenue and/or goodwill from end-users.
- However, all three Nordic incumbents have a different approach. They provide minimal basic SLAs and SLGs that compensate for little more than the on-going cost of the wholesale services over the given period, but they also invite wholesale customers to take enhanced SLA/SLGs.
 - These add considerably to the monthly charges, so operators are left with a potentially difficult choice between a basic service with minimal penalties if it fails, and an enhanced service that could be surplus to requirements. The actual level of faults is not clear, and we are not aware of the proportion of lines that use the enhanced options.
 - For example, Telenor's PSTN WLR costs NOK130.40 per month (or NOK84.40 per month if taken in conjunction with Telenor DSL). If the fault is not cleared within one or two working days (depending on the type of fault) the operator pays a flat one-off penalty of NOK80, irrespective of how long it takes to clear. However, the next most basic SLA is for a five-hour repair-time; this costs an additional NOK51.90 per month, which would significantly increases the retail charge the operator would have to levy. Telenor is still subject to SMP regulation in Market 1.

The level and structure of SLGs varies greatly

- The level and structure of SLGs varies greatly. More often than not penalties are related in some way to the monthly cost of service. The variation of SLG penalties are described below:
 - The equivalent cost of the service for a delay to an activation or repair [the purchasing operator gets its money back]
 - Very frequently the penalty is the monthly charge per **day** of delay
 - At its most extreme, the basic penalty can be as high as the monthly charge per **hour** of delay
 - In the case of more punitive penalties there is a cap to the penalty, and all operators have recourse to some form of *force majeure* clause
- Penalties can also be per-fault or per failed activation, there is no time element. These are generally part of the very basic SLA/SLG regimes of Nordic operators
- Pegging penalties to monthly charges leads to some apparent anomalies that some regulatory regimes appear to have corrected. For instance, the monthly cost of shared LLU is typically GBP1.50 compared to GBP7.50 for full LLU, so all other things being equal, compensation could be 5 times higher for full LLU than for shared LLU. However, the cost to the operator (in terms of all current and future lost revenue and goodwill) for any fault or failed activation of shared LLU is likely to be much more than one-fifth that of the result of equivalent faults in full LLU. An example of apparent redress of this anomaly is Telecom Italia, whose SLG pegs full LLU missed provisioning to the full LLU monthly charge, but penalises shared LLU at an unpegged daily rate.

Regulators generally treat SLA/SLG as a non-cost item

SMP and SLA/SLG arrangements

- In practice for SMP operators, the modelling of SLA/SLG arrangements in opex is not conducted to any great extent, if at all. Generally regulators treat them as non-cost items, effectively terms and conditions
- However, there is on precedent for regulators imposing a sort of SLA. In 2008, Comreg imposed legally binding performance targets on eircom (as USP rather than as SMP) for fault occurrence, fault repair times and connections. It failed to meet some of these target and was fined.

Comprehensiveness of SLAs/SLGs

- The absolute number of SLAs/SLGs that Openreach provides for WLR/LLU is more numerous when compared to other operators. Most other operators do not provide dead on arrival and missed appointment SLAs
- It is not possible to determine whether comprehensiveness of SLAs/SLGs, since many of them are not directly comparable. For example, comparing a maximum elapsed time between order and delivery with Openreach's agreed delivery date SLA

Operators have recourse to the notion of force majeure in SLAs/SLGs, but only two have any clear definition

- Only in Belgium, Denmark, France, Ireland, Italy, Netherlands and Portugal do operators refer to force majeure in provisioning and repair SLAs/SLGs
- Most operators do not define what they mean by force majeure, but two provide specific examples:
 - Telecom Italia force majeure examples (WLR provision and repair SLA)
 - Natural disasters (floods, earthquakes, etc.)
 - National strikes
 - Local holidays not recognized by the operator
 - Portugal Telecom force majeure examples (LLU SLA)
 - extreme weather conditions (e.g. typhoons, lightning / lightning, extreme floods and high winds)
 - acts of third parties (e.g. third party actions on equipment)
 - theft / larceny (e.g. stocks theft / pilferage of equipment)
 - vandalism (e.g. actions of vandalism or sabotage)
- There are some other circumstances in which operators state they may not fulfil their SLA obligations/pay SLGs, which include: failures in third party equipment, delays caused by the need to obtain digging permits and other less well defined circumstances (for example “exceptional circumstances”)
- Belgacom specifically defines that it will not pay repair SLGs in 100% of cases. A percentage of wrongful repairs are taken into account when calculating its SLG pay-outs. The same is true for provisioning, Belgacom states *“compensations will never be applicable to the 1% of the orders representing the worst cases.”*

Performance with respect to SLA targets varies greatly between operators?

- We analysed KPI data for six countries:
 - Belgium, Denmark, Ireland, Norway, Spain and Sweden
 - KPI data for other countries was not available (Austria, France, Germany, Italy, Netherlands, Portugal)
- We analysed the activation and repair performance for WLR/LLU, where available. None of the data we have analysed indicate any SLA performance seasonality (KPIs that show consistent seasonality. For example, show a consistent drop in percentage of lines deployed on time during 1Q of each year).
 - we also checked whether there was a dip in performance in line with that experienced by Openreach in 2012, we could not identify such a correlation
- However, it should be noted that the KPI data analysed for Belgium, Denmark, Norway and Sweden shows that operators do not always achieve their SLA targets (provision and repair) and there is significant variability in their performance
- Openreach produces KPI data for LLU provision, LLU repair, WLR provision and WLR repair
 - None of the operators in other countries provide such KPI data
 - It should be noted that WLR and LLU is not as important a part of the market in all countries as it is in the UK

Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

WLR

LLU (MPF)

LLU (SMPF)

FTTC/P (VULA)

ISDN 2

ISDN 30

EMP

Force majeure

Introduction to SLA/SLG activation and repair analysis

- All publically available SLA/SLG activation and repair information was collected for WLR, LLU, VULA and ISDN products
- To compare the SLA data we undertook the following tasks, for each product:
 - compared Openreach’s SLAs with all other operators, identifying SLAs that could be compared (like for like or similar). **Not all SLAs are comparable, an operator may not have a SLA that is equivalent to Openreach’s. For example, WLR disconnected in error.**
 - once SLAs were deemed to be comparable, the financial penalty for failing to achieve the SLA was calculated (please table to the right) for a basic product. Not all products are basic, some products may include superior SLAs which are not comparable to basic products.

Financial penalty benchmarking

SLA/SLG (All penalties in GBP, unless stated)	Metric measured (delay fulfilling SLA/SLG), in working days/hours
Activation	Days: 1, 3, 10 and 30
Repair	Hours: 2, 8, 24 and 48 hours

- For each service (WLR, LLU etc.) we provide the following slides:
 - identify comparable SLAs\SLGs
 - provide SLA target and SLG description for each comparable SLA
 - a chart illustrating the financial penalties incurred (based on the delays shown above), the standard delivery time for the service and indicate whether all or a proportion of activation and repair requests fell into the agreed period.

WLR activation SLAs: Only activation delay SLA can be compared to other countries

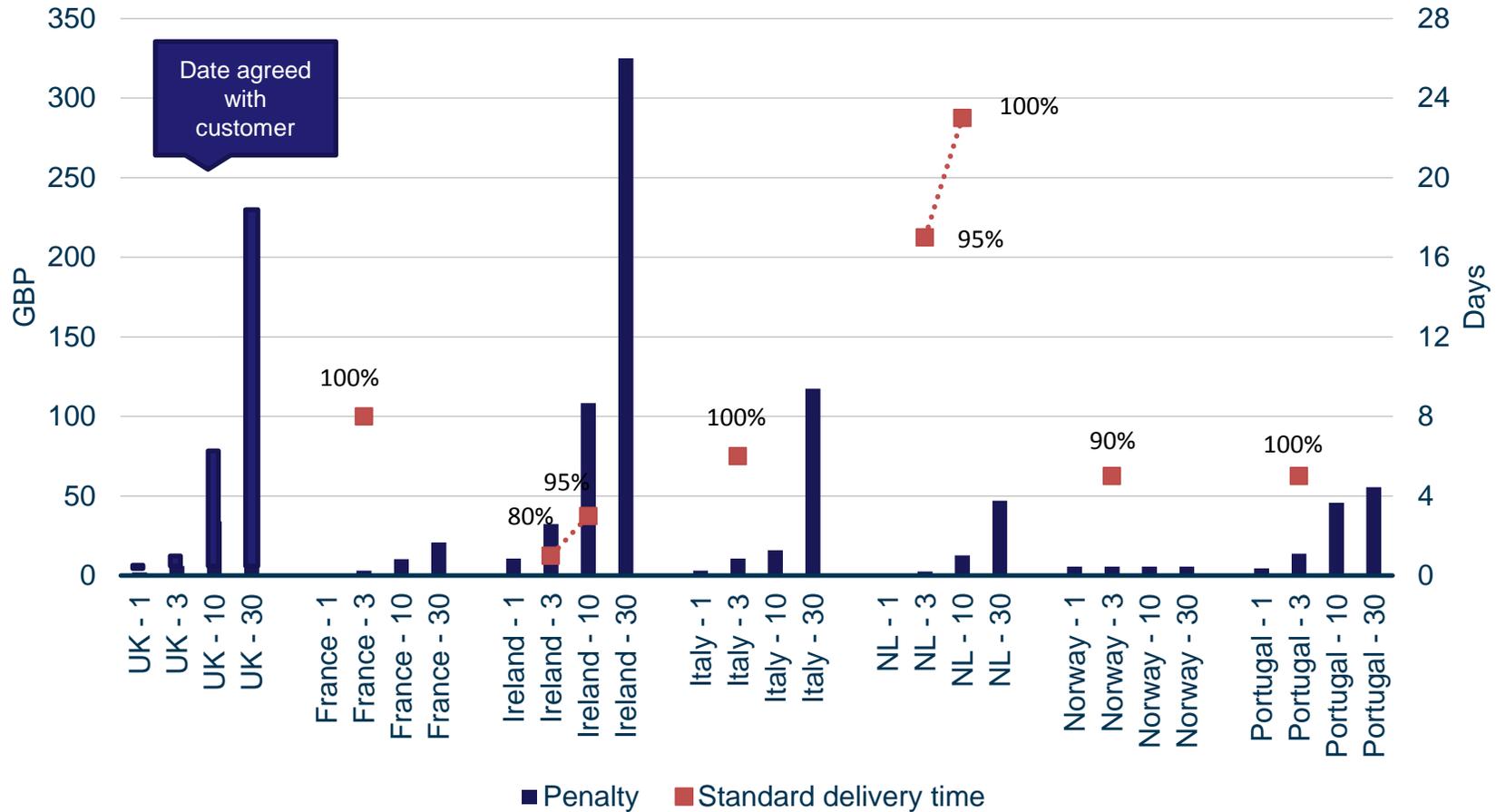
Country	Number of products	Activation/order types				
		Activation and transfer delay	Maximum appointment availability lead-time (engineer required)	Missed appointment (engineer required)*	Disconnection in error	Other
UK	Two	✓	✓	✓	✓	
Denmark	Five					✓
France	One	✓				
Ireland	One	✓				✓
Italy	Four	✓				
Netherlands	Two	✓				✓
Norway	One	✓				
Portugal	One	✓				
Spain	Two			✓ (geographic specific)		
Sweden	One					✓

*Number WLR products (basic, premium, complex etc.). Geographic based SLA - depends on location of customer, could be regional variations, or product installed at multiple geographic locations. ** For orders requiring an end user engineering visit, requirement for engineer to arrive during the appointment period (AM/PM)*

WLR activation

Country	SLA target	SLG description
UK	<ul style="list-style-type: none"> Activation and transfer orders by midnight on date agreed 	1 month line rental per day (GBP7.89) (or part thereof). Capped at 60 days per line.
France	<ul style="list-style-type: none"> PSTN: \leq 8 days 	GBP1.04 (PSTN) (equivalent to 10% of the subscription) per calendar day of delay, maximum penalty is equivalent to 2 months of subscription
Ireland	<ul style="list-style-type: none"> New order (existing line): 80% completed \leq 1 day New order (existing line): 99% completed \leq 3 days new line: 80% completed \leq 10 days 	GBP 10.83 per account affected per working day, or part thereof, of delay.
Italy	<p>Four (one for each order type)</p> <ul style="list-style-type: none"> Standard: 100% completed \leq 6 days Non-standard: 100% completed \leq 8 days Complex: 100% completed \leq 45 days Client has several locations: 100% completed \leq 15 days 	GBP3.2/10.66/15.99/27.71 (30% of monthly subscription) for 1-2 calendar day delay; 100% (3-7 days), 150% (8-15 days), 200% lump sum plus 60% of monthly subscription per day for 16 delay or more)
Netherlands	<ul style="list-style-type: none"> 95% : \leq 17 days (standard delivery time) 100% : \leq 23 days 	GBP0.85 per order per day of delay (for delivery between the 18 th and 23 rd day); GBP4.26 per order for the 24 th day and additional GBP1.71 per additional day (\geq 25 days)
Norway	<ul style="list-style-type: none"> 90% delivered in 5 business days 	GBP5.66
Portugal	<ul style="list-style-type: none"> 100% completed \leq 5 days 	GBP4.58 Per day of delay for delays up to 10 days; (1/22)*Monthly subscription (GBP10.75) per day for delays more than 10 days; with the maximum charge of monthly subscription

WLR activation summary: Openreach's SLG penalty is high compared with peers that guarantee 100% fulfilment



Observations on penalties for WLR activation

- Among those operators that have 100% achievement targets, Openreach has the highest penalties
 - It should be noted that approximately one third of activations require an engineer. In such cases that an engineer misses an appointment, an additional SLG applies and a penalty of GBP40 is added to the SLGs on the previous slide
 - It should be noted that activations (transfers) cannot be conducted until such time that a cooling-off period of 10 days has elapsed (which applies to all CSPs)
- Telecom Italia has penalties that are nearly as high as those of Openreach, but because its delay threshold is much lower its penalties can be counted as stricter than that of Openreach [but there isn't a delay threshold for Openreach]
- eircom has punitive penalties, but it has a much more relaxed SLA when compared to most of its peers

WLR repair: all other countries providing WLR have repair SLAs, but only Openreach has repair missed appointment SLAs

Country	Number of products	Repair types		
		General /debugging /resolution	Missed appointment	Other
UK	Two (WLR basic, WLR premium)	✓	✓	
Denmark	Five	✓		
France	Two	✓		
Ireland	One	✓		
Italy	Four	✓		
Netherlands	Two	✓		
Norway	Three	✓		✓
Portugal	One	✓		
Spain	Two	✓ (geographic specific)		
Sweden	One	✓		

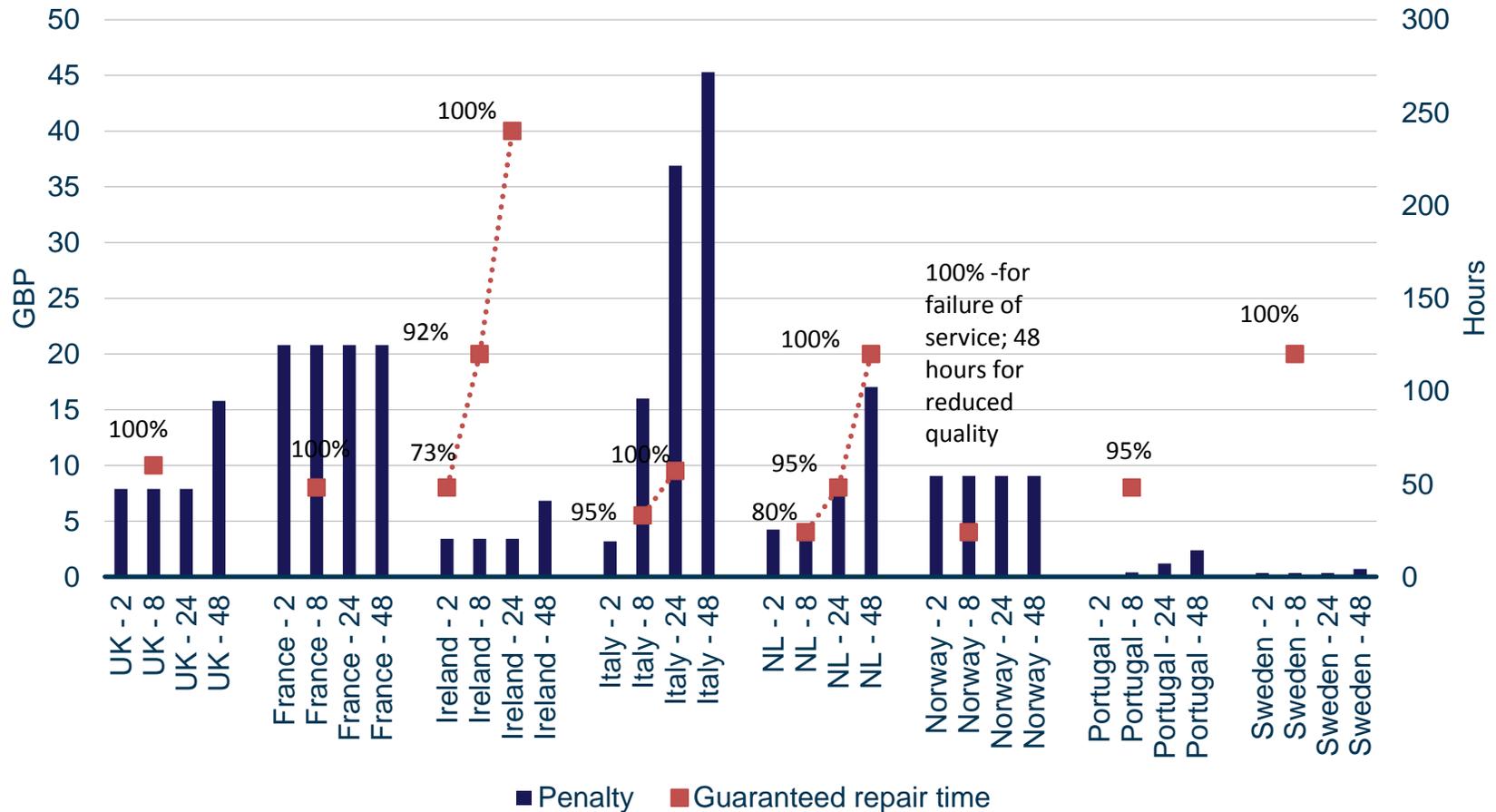
WLR repair [1/2]

Country	SLA target	SLG description
UK	<ul style="list-style-type: none"> Clear by 23.59 day after next (level 1) 3 higher levels available 	GBP7.90 (basic) /9.17 (premium) (equivalent to 1 month line rental) per day; capped at 60 days per line
Denmark	<ul style="list-style-type: none"> varying from 1 hour to 2 working days; depends on service level 	Information not available
France	<ul style="list-style-type: none"> 48 hours for PSTN 4 hours for PSTN + ISDN 	GBP20.80 (PSTN) /GBP71.40 (PSTN+ISDN) (equivalent of 2 months subscription per day); capped equivalent of 12 months subscription per line
Ireland	<ul style="list-style-type: none"> 73% of repair completed in 2 working days 92% of repair completed in 5 working days 100% of repair completed 10 working days 	GBP3.41 per day for breaching 2 working day target; GBP5.97 per day for breaching 5 working day target GBP8.53 per day for breaching 10 working day target
Italy	<ul style="list-style-type: none"> 95% completed within 3 hours of the end of the first full working day (incl Saturdays) after the reporting of the fault (21 hours to 45 hours) 100% completed within 3 hours of the end of the second full working day (incl Saturdays) after the reporting of the fault (45 hours to 69 hours) 	GBP3.20 (30% of monthly subscription) for 5h of the delay (residential price); GBP10.66 (100% of monthly subscription) for 5-8h of the delay (residential price); GBP15.99 (150% of monthly subscription) for 8-10h of the delay (residential price); GBP31.98 (200% of monthly subscription) lump sum and 100% of daily subscription per extra hour for 10h+ of the delay (residential price)

WLR repair [2/2]

Country	SLA target	SLG description
Netherlands	Basic: <ul style="list-style-type: none"> 80% within 10 working hours for lines over ground and 1 working day for lines underground; 95% within 20 working hours for lines over ground and 2 working day for lines underground; 100% within 40 working hours for lines over ground and 5 working day for lines underground Premium: <ul style="list-style-type: none"> 90% within 8 working hours; 95% within 24 working hours; 100% within 48 working hours 	Basic: <ul style="list-style-type: none"> GBP4.26 per each 12h of service delay Premium: <ul style="list-style-type: none"> GBP8.53 per each 24h of service delay
Norway	approx. within 1 working day for type A errors (service stopped) approx. within 2 working days for type B errors (quality of the service reduced)	GBP9.05
Portugal	<ul style="list-style-type: none"> 95% of requests are served within 2 working days 	GBP0.05 per hour (with maximum of monthly subscription, GBP10.75, per line)
Spain	<ul style="list-style-type: none"> Failure of service: 6 h in the capital of the province /8 h outside the capital Reduced quality of service: 8 h in the capital of the province /10 h outside the capital 	10%-16.7% of monthly subscription according to errors and geography: Failure of service: in capital of provinces: GBP6.56; outside the capital: GBP4.91 Reduced quality of service: in capital of provinces: GBP4.91. outside capital: GBP3.93
Sweden	<ul style="list-style-type: none"> 5 working days 	GBP0.36 per day

WLR repair summary: Openreach SLG penalty is generally comparable with benchmarks, though much higher than Ireland, Portugal and Sweden



Observations on penalties for WLR repair

- Openreach is stricter than average for repair SLAs and for penalties
- Orange has shorter repair times and higher penalties
- Telecom Italia has shorter repair times and penalties that ramp up after a ten hour excess, at an incremental rate of 100% of the daily WLR rate per hour.
- Telia is an outlier: however, operators have a range of augmented service options, and it might appear that the most basic level would not be one that most operators would opt to take

Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

WLR

LLU (MPF)

LLU (SMPF)

FTTC/P

ISDN 2

ISDN 30

EMP

Force majeure

Full LLU /MPF activation: most of countries are comparable for activation SLAs but only a couple comparable for other services SLAs

Country	Number of products	Activation/order types					
		Activation delay	Transfer delay	Maximum appointment availability lead-time (engineer required)	Missed appointment (engineer required)	Dead on arrival	Other
UK	Three (service level 2, 3, 4)	✓	✓	✓	✓	✓	
Austria	Three	✓	✓				
Belgium	One	✓					
Denmark	One	✓					
France	Three	✓					
Germany	One	✓					
Ireland	One	✓	✓				
Italy	One				✓		
Netherlands	Two	✓					
Norway	One	✓					
Portugal	Four	✓	✓				
Spain	One	✓					
Sweden	Two	✓					

Full LLU /MPF activation [1/3]

Country	SLA target	SLG description
UK	<ul style="list-style-type: none"> For Level 2: agreed with client, no earlier than 3 working days For level 3 & 4: =/< 3 days 	<ul style="list-style-type: none"> GBP8 per Working Day or part Working Day for a maximum of 60 consecutive Working Days
Austria	<ul style="list-style-type: none"> =/< 8 days 	<ul style="list-style-type: none"> GBP61.97 per working day of service delay
Belgium	<ul style="list-style-type: none"> 95% of service provided within 8 working days (without customer visit) or within 10 working days (with customer visit) 99% of service provided within 18 working days (without customer visit) or within 20 working days (with customer visit) 	<ul style="list-style-type: none"> GBP8.61 per working day for the first 10 days of delay; GBP4.30 per working day after 10 days of delay
Denmark	<ul style="list-style-type: none"> 95% delivery on agreed date 95% delivery within 20 days for activation standard (including technician's visit) 95% delivery within 18 days for activation without technician's visit 	<ul style="list-style-type: none"> GBP14.11

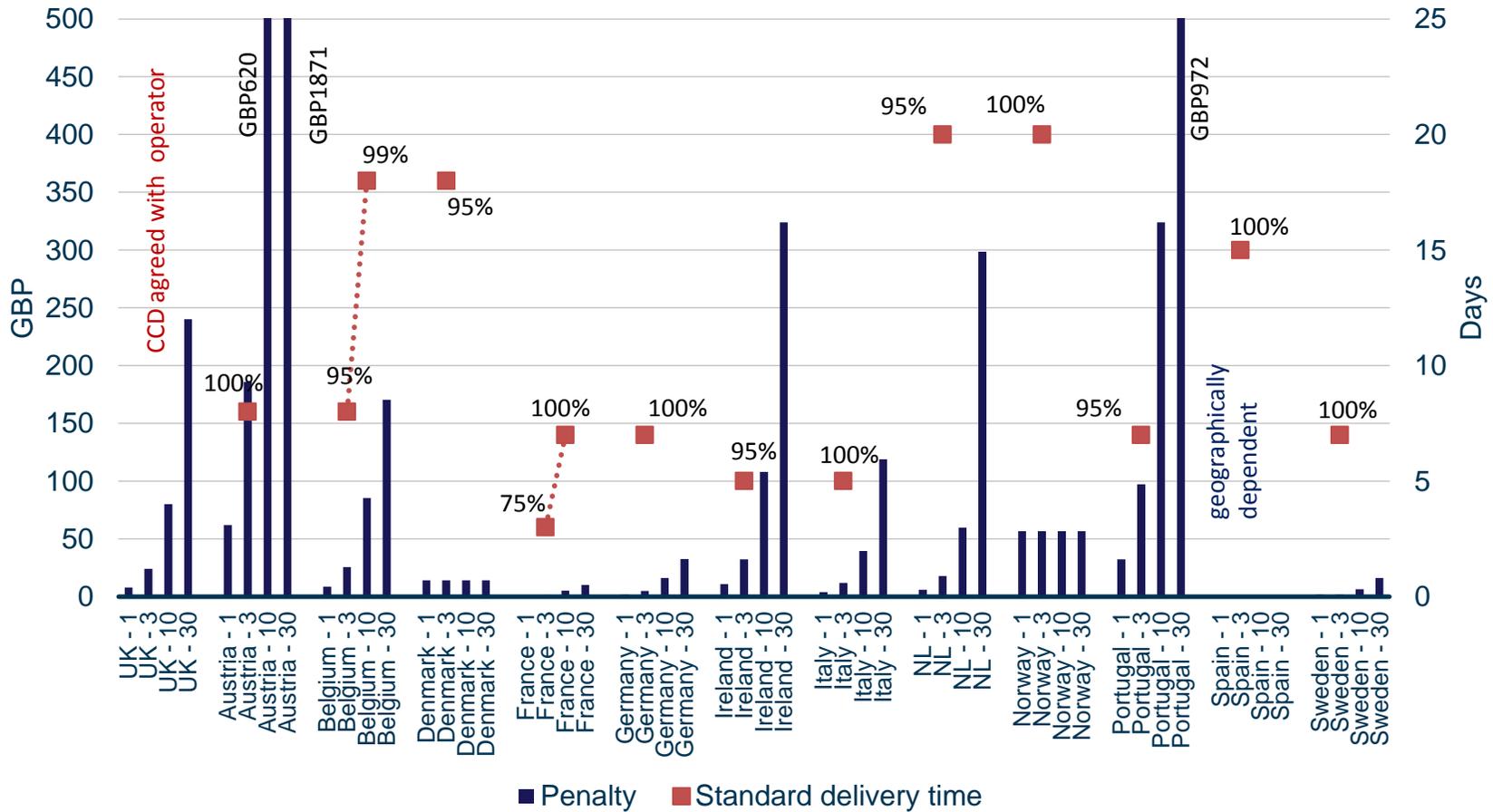
Full LLU /MPF activation [2/3]

Country	SLA target	SLG description
France	<ul style="list-style-type: none"> 75% of orders are delivered in 3 working days; 100% of orders are delivered in 7 working days 	<ul style="list-style-type: none"> GBP0.51 /0.68 /1.88 (for products standard 1/2/3) (10% of the subscription) per calendar day of delay, maximum 2 months of subscription; after 30 calendar days of delay additional penalty in amount of 2 months subscription applies
Germany	<ul style="list-style-type: none"> =/ < 7 days 	<ul style="list-style-type: none"> GBP1.62 (10% of the delivery fee) per day for the first 10 days of delay; If delay exceeds 10 days, the whole amount of the delivery fee (GBP16.23) should be repaid (lump sum) + 5% of the delivery fee per day from day 11 of the delay
Ireland	<ul style="list-style-type: none"> =/ < 5 days; 95% of request in accordance with performance metric 	<ul style="list-style-type: none"> GBP10.8 per account affected per Working Day or part thereof of delay.
Italy	<ul style="list-style-type: none"> 95% of order are delivered on agreed date 100% of order are delivered within 3 days of the agreed date (no less than 5 days after receiving the order) 	<ul style="list-style-type: none"> 50% of monthly subscription per day of delay (GBP3.96)
Netherlands	<ul style="list-style-type: none"> =/ < 20 days 	<ul style="list-style-type: none"> For standard: GBP5.97 per one working day of delay; the amount of penalty per day doubles after 10 working days of delay For premium: GBP8.53 for first 16 hours of delay, then it becomes GBP6.82 for each 12 hours of delay; maximum delay is 10 days

Full LLU /MPF activation [3/3]

Country	SLA target	SLG description
Norway	<ul style="list-style-type: none"> • electronic confirmation: 100% of delivery within 4 business days • order received: 100% of delivery within 20 business days • on agreed date: 97% delivery on or before the agreed date 	<ul style="list-style-type: none"> • GBP56.56
Portugal	<ul style="list-style-type: none"> • 95% of orders are delivered in 7 working days 	<ul style="list-style-type: none"> • GBP32.4 per day of delay
Spain	<ul style="list-style-type: none"> • =/< 15 days 	<ul style="list-style-type: none"> • Penalty depends on various factors such as geographical zone etc
Sweden	<ul style="list-style-type: none"> • =/< 7 days 	<ul style="list-style-type: none"> • GBP1.6 (5% of quarterly subscription fee) per every 3 days of delay, with maximum charge equal to subscription fee per one quarter

Full LLU activation summary: SLG penalties vary greatly



Observations on penalties for full LLU - activation

- Openreach has an SLA that relates to the agreed provisioning date, whereby orders have to be completed by midnight on the agreed date.
 - It should be noted that approximately one third of activations require an engineer. In these cases two SLAs apply. Openreach has to offer an appointment within 13 working days (due to be reduced to 12 working days) and keep the appointment on the agreed date. In such cases as Openreach misses the maximum appointment availability lead-time target a penalty of GBP2 per day applies. For each missed appointment, a penalty of GBP40 applies
 - It should be noted that no activations or transfers can be conducted until such time that a consumer has obtained their MAC code and a cooling-off period of 10 days has elapsed (which applies to all CSPs)
- Telecom Italia has both an SLA relating to the agreed date (95% on agreed date and 100% no more than three days after the agreed date) and a maximum provisioning time (100% 5 days after order)
- 8 days for transfer appears to be a typical period.
- Penalties vary by several orders of magnitude
 - A1 Telekom Austria is penalised GBP61.97 per day (about 1000% the monthly LLU charge)
 - Telia is penalised GBP1.60 (5% of the monthly LLU charge)

Openreach Full LLU /MPF repair: only debugging delay is comparable with other countries

Country	Number of products	Repair types	
		Debugging	Missed appointment
UK	Three (service level 2, 3, 4)	✓	✓
Austria	Three	✓	
Belgium	One	✓	
Denmark	One	✓	
France	Three	✓	
Germany	One	✓	
Ireland	One	✓	
Italy	One	✓	
Netherlands	Two	✓	
Norway	One	✓	
Portugal	Four	✓	
Spain	One	✓	
Sweden	Two	✓	

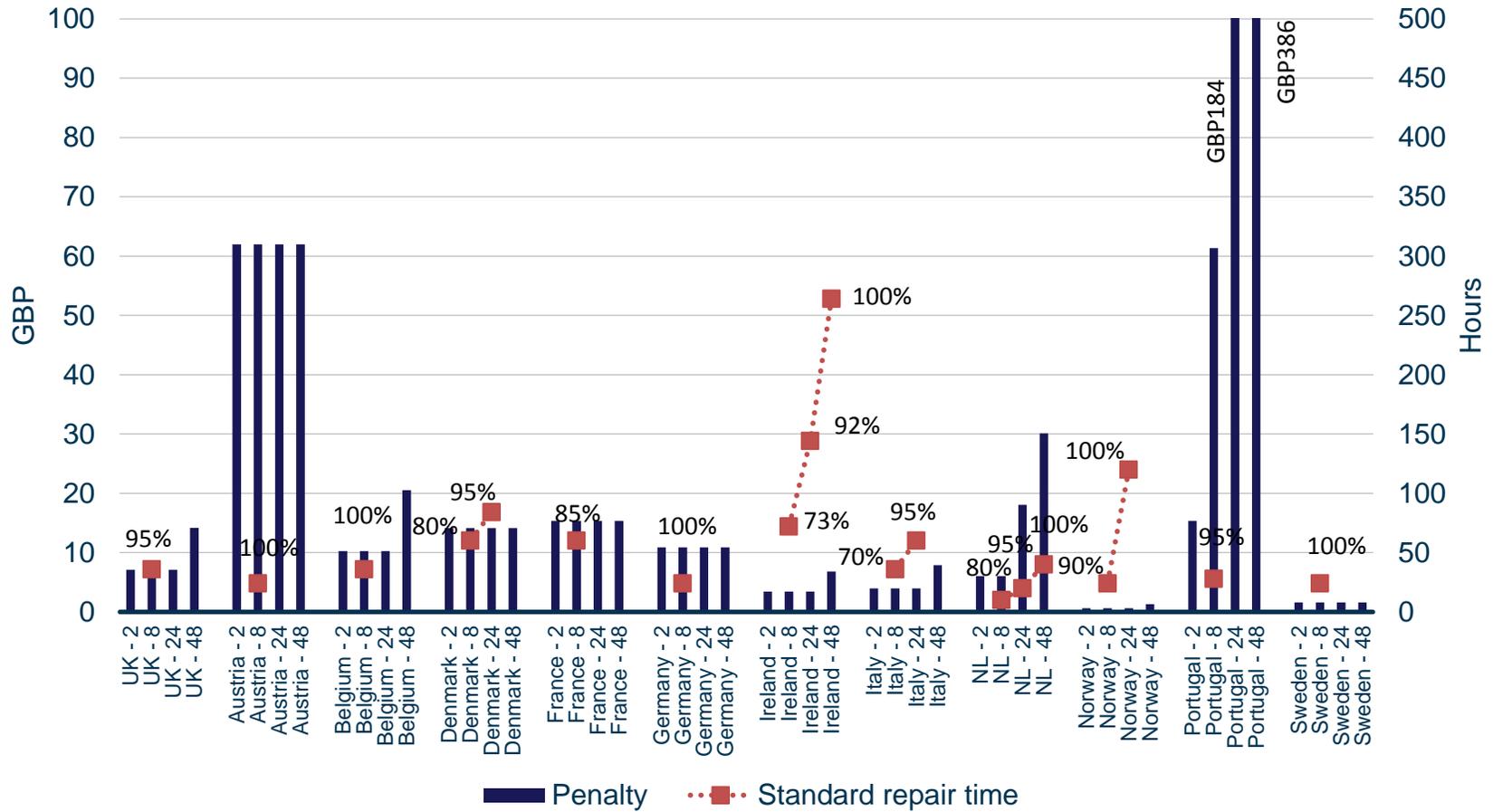
Full LLU /MPF repair [1/2]

Country	SLA target	SLG description
UK	<p>Level 2 (default for LLU): Clearance by 23.59 next working day</p> <p>Level 3: Clearance by 23:59 the same day if the fault was reported before 12:59; Clearance by 12:59 if the fault was reported between 13:00 and 23:59 the day before</p> <p>Level 4: Clear within 6 hours, any time of day, any day of the year.</p>	GBP7.09 (100% of monthly rental) per day for maximum 60 consecutive working days for all levels
Austria	24 /8 /6 hours for standard /business /top	GBP61.97 /184.19 /245.59 for each of the three times the SLA delay time (3 times 24 /8 /6 hours); then GBP200 /724.8 /724.8 for the first week and for every next week of the delay.
Belgium	1 working day after the trouble has been reported or after the date agreed with the client	GBP10.27 (150% of daily rental fee) per calendar day;
Denmark	80% of errors are fixed in 60h after reporting; 95% of errors are fixed in 84h after reporting	GBP14.11 one-off, payable only once per quarter
France	<p>Basic: 85%, end of second working day following reporting of failure</p> <p>Optional: 100% 10 hours ; 100% 4 hours; 100% 4 hours 24/24</p>	<p>Basic: GBP15.32 (two months rental)</p> <p>10H: GBP25.56 (two months rental plus cost of optional service)</p> <p>4H: GBP29.09 (two months rental plus cost of optional service) rising to 12 months subscription if delay exceeds 7 hours.</p>
Germany	24 hours	<ul style="list-style-type: none"> • GBP10.9 for the delay < =48 hours; • GBP21.8 for the delay > 48 hours;
Ireland	<p>73% of repair completed in 3 working days;</p> <p>92% of repair completed in 6 working days;</p> <p>100% of repair completed in 11 working days</p>	<p>GBP3.41 per day for the first 3 days;</p> <p>GBP5.97 per day for the next 3 days;</p> <p>GBP8.53 per day for the next 5 days;</p>

Full LLU /MPF repair [2/2]

Country	SLA target	SLG description
Italy	70% in 1 working day; 95% in 2 working days	GBP3.95 (50% of monthly subscription) per day of delay
Netherlands	80%: 10 working hours 95%: 20 working hours 100%: 40 working hours	<ul style="list-style-type: none"> For standard: GBP6.02 per 10 working hours of delay; the amount of penalty per day doubles after 100 working hours of delay; maximum penalty = 20 working days For premium: GBP8.61 for first 16 hours (any) of delay, then it becomes GBP6.89 for each 12 hours of delay
Norway	90% of requests within approx. 1 business day; 100% of requests within 5 business days	GBP0.64 (6% of the subscription price) per day of delay, max 60 days
Portugal	95% of requests served within 28/8/12 hours for standard /Premium 1/Premium 2; 100% of requests served within 8/12 hours for Urgent 1/Urgent 2	GBP7.67/9.8/11.93 per 1 hour of delay for standard /Premium 1/Premium 2; GBP7.67 per 1 hour of delay for Urgent 1/2
Spain	<ul style="list-style-type: none"> error of high priority (defined in the contract) : fixed in 6h; error of medium priority: fixed in 24h; error of low priority: fixed in 72h 	Penalty depends on various factors such as geographical zone etc.
Sweden	12/24 hours depending on product	<ul style="list-style-type: none"> GBP1.6 (5% of quarterly subscription fee) per every 3 days of delay, with maximum charge equal to subscription fee per one quarter

Full LLU repair summary



Observations on Full LLU/ MPF - repair

- Openreach's SLA and SLG look about average
- Telenor and eircom have low penalties and relaxed repair times
- Skanova has a strict repair time but low penalties
- Telekom Austria has a high penalty (which doubles every 72 hours) and a tight repair schedule
- Portugal Telecom has very sharply rising penalties based on hours*monthly rental, but this applies only in cases where the total number of repairs that have missed the target repair time exceeds 5%.
- KPN's and PT's SLG payments are very sensitive, as a small delay to a repair results in a significant penalty

Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

WLR

LLU (MPF)

LLU (SMPF)

FTTC/P

ISDN 2

ISDN 30

EMP

Force majeure

Shared LLU /SMPF activation

Country	Number of products	Activation /order types			
		Activation delay	Transfer delay	Dead on arrival	Other
UK	Three (service level 2, 3, 4)	✓	✓	✓	
Austria	Three	✓	✓		
Belgium	One	✓			
Denmark	One	✓			
France	One	✓			
Germany	One	✓			
Ireland	One	✓			
Norway	One	✓			
Portugal	Four	✓	✓		
Spain	One	✓			

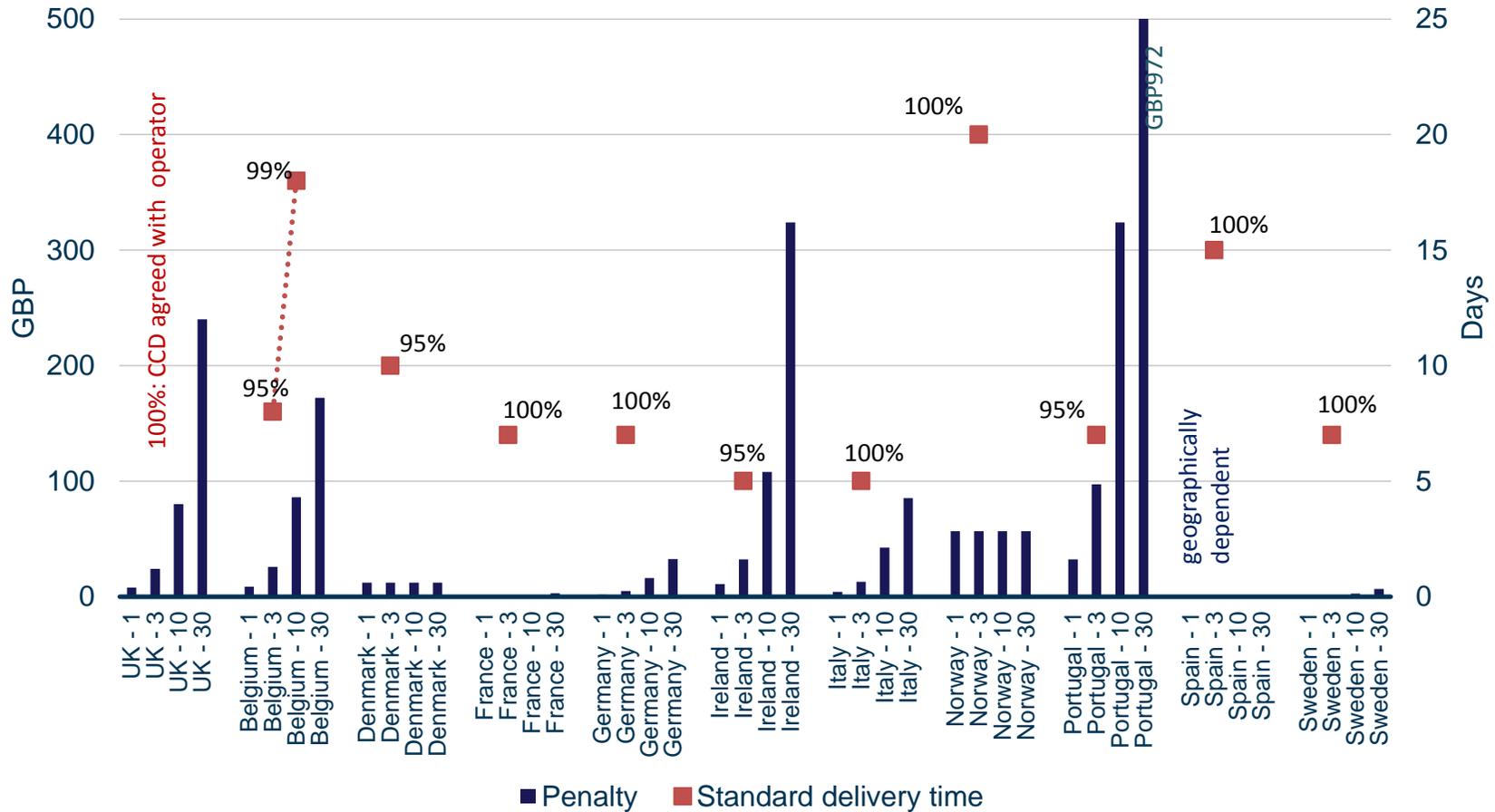
Shared LLU /SMPF activation [1/2]

Country	SLA target	SLG description
UK	Agreed with the client, no earlier than 4 working days, exception can be done if there are available slots	GBP8 Per Working Day or part Working Day for a maximum of 60 consecutive Working Days.
Austria	=/< 8 days	Penalties are not applicable in the first six months of the contract. (This because the service has never been used commercially yet)
Belgium	<ul style="list-style-type: none"> 95% of service provided within 8 working days (without customer visit) or within 10 working days (with customer visit) 99% of service provided within 18 working days (without customer visit) or within 20 working days (with customer visit) 	<ul style="list-style-type: none"> GBP8.61 per day for first ten days GBP4.30 per day thereafter
Denmark	<ul style="list-style-type: none"> 95% delivery on agreed date 95% delivery within 20 days for activation standard (including technician's visit) 95% delivery within 10 days for activation without technician's visit 	GBP12.04 one-off
France	100% of orders are delivered in 7 working days	GBP0.14 (10% of the subscription) per calendar day of delay, maximum penalty is equivalent to 2 months of subscription; after 30 calendar days of delay additional penalty in amount of 2 months subscription applies

Shared LLU /SMPF activation [2/2]

Country	SLA target	SLG description
Germany	=/< 7 days	<ul style="list-style-type: none"> • GBP1.62 (10% of the delivery fee) per day for the first 10 days of delay; • If delay exceeds 10 days, the whole amount of the delivery fee (GBP16.23) should be repaid (lump sum) + 5% of the delivery fee per day from day 11 of the delay
Ireland	=/< 5 days; 95% of request in accordance with performance metric	GBP10.8 per account affected per working day or part thereof of delay.
Italy	<ul style="list-style-type: none"> • 95% of order are delivered on agreed date • 100% of order are delivered within 3 days of the agreed date (no less than 5 days after receiving the order) 	GBP4.26 per day of delay, GBP85.20 maximum
Norway	<ul style="list-style-type: none"> • electronic confirmation: 100% within 4 business days • order received: 100% of delivery within 20 business days • on agreed date: 97% delivery on or before the agreed date 	GBP56.56
Portugal	95% of orders are delivered in 7 working days	GBP32.4 per day of delay
Spain	=/< 15 days	Penalty depends on various factors such as geographical zone etc
Sweden	=/< 7 days	GBP0.66 5% of quarterly subscription fee per every 3 days of delay, with maximum charge equal to subscription fee per one quarter

Shared LLU activation summary: Openreach's SLA/SLG is arguably the most demanding after that of Portugal Telecom



Observations on Shared LLU / SMPF activation

- Openreach's SLA/SLG looks quite stringent, although the delay is defined only with respect to the agreed date
 - It should be noted that approximately one third of activations require an engineer. In such cases that an engineer misses an appointment, an additional SLG applies and a penalty of GBP40 is added to the SLGs on the previous slide
 - It should be noted that activations (transfers) cannot be conducted until such time that a consumer has obtained their MAC code and a cooling-off period of 10 days has elapsed (which applies to all CSPs)
- Telecom Italia has both an SLA relating to the agreed date (95% on agreed date and 100% no more than three days after the agreed date) and a maximum provisioning time (100% 5 days after order)
- As with for full LLU, penalties vary by two orders of magnitude.
- Penalties can be extremely low if based on a percentage of the shared LLU costs, which are typically around EUR1 to EUR2 per month. This is the case in France and Sweden.
- In the case of Germany the penalty is based on the delivery charge, not the monthly charge.

Shared LLU /SMPF repair: only debugging delay SLA is comparable with other countries

Country	Number of products	Repair types	
		Debugging	Missed appointment
UK	Three (service level 2, 3, 4)	✓	✓
Austria	Three	✓	
Belgium	One	✓	
Denmark	One	✓	
France	One	✓	
Germany	One	✓	
Ireland	One	✓	
Italy	One	✓	
Norway	One	✓	
Portugal	Four	✓	
Spain	One	✓	
Sweden	Two	✓	

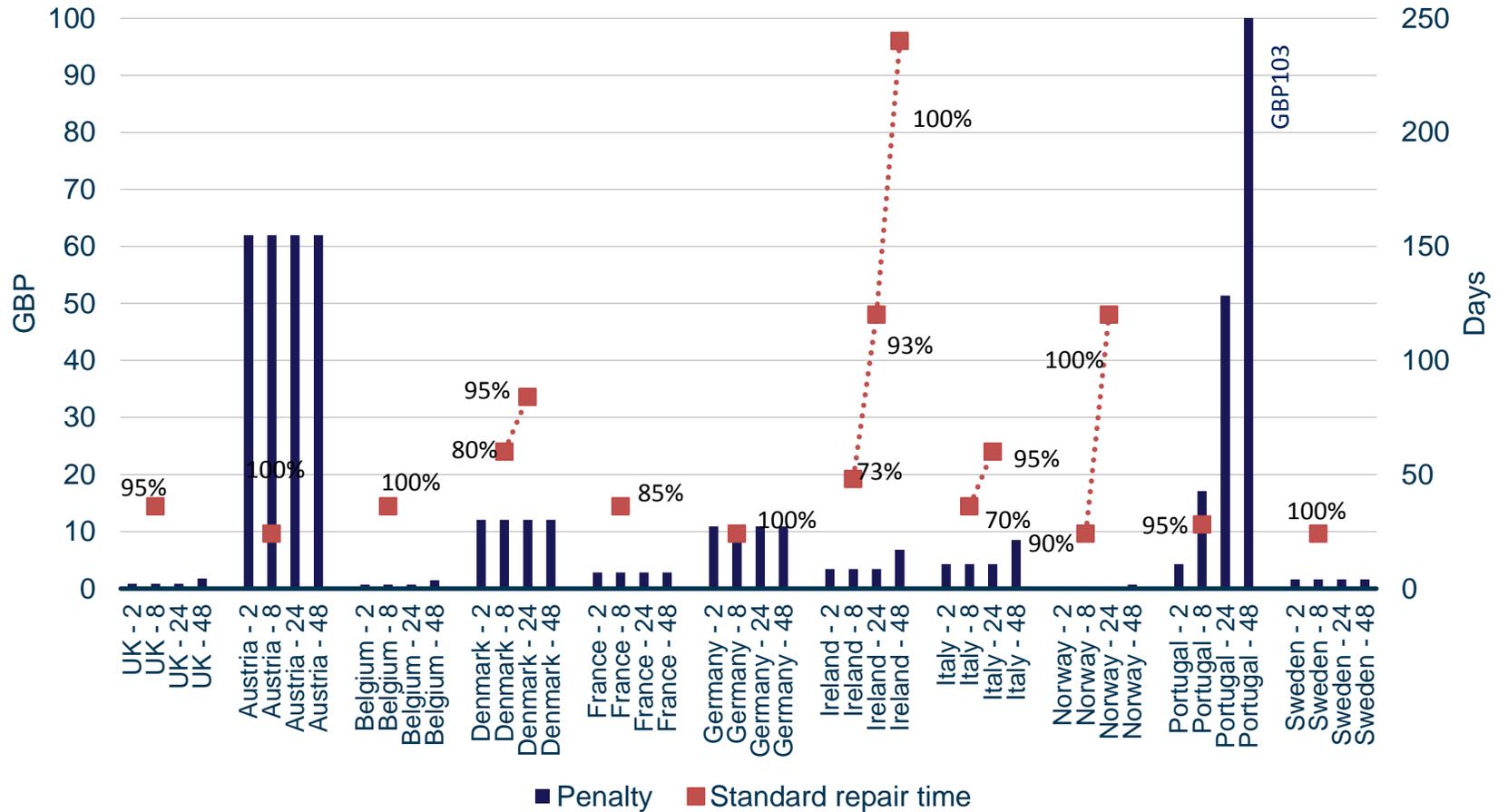
Shared LLU /SMPF repair [1/2]

Country	SLA target	SLG description
UK	<p>95% levels</p> <p>Level 2 (default for LLU): Clearance by 23.59 next working day</p> <p>Level 3: Clearance by 23:59 the same day if the fault was reported before 12:59; Clearance by 12:59 if the fault was reported between 13:00 and 23:59 the day before</p> <p>Level 4: Clear within 6 hours, any time of day, any day of the year.</p>	GBP0.87 (100% of monthly rent per day for maximum 60 consecutive working days)
Austria	24 /8 /6 hours for standard /business /top	GBP61.97 /184.19 /245.59 for each of the three times the SLA delay time (3 times 24 /8 /6 hours); then GBP200 /724.8 /724.8 for the first week and for every next week of the delay.
Belgium	1 working day after the trouble has been reported or after the date agreed with the client	GBP0.72 (150% of daily rental fee) per calendar day;
Denmark	80% of errors are fixed in 60h after reporting; 95% of errors are fixed in 84h after reporting	GBP12.04 one off
France	End of the working day following the one on which the fault was reported	GBP2.80 (equivalent of 2 months subscription) in total no more than equivalent of 12 months subscription should be repaid (per line)
Germany	24 hours	<ul style="list-style-type: none"> • GBP10.90 for the delay < =48 hours; • GBP21.80 for the delay > 48 hours
Ireland	73% of repair completed in 2 working days; 92% of repair completed in 5 working days; 100% of repair completed in 10 working days	<ul style="list-style-type: none"> • GBP3.41 per day for the first 2 days; • GBP5.97 per day for the next 3 days; • GBP8.53 per day for the next 5 days;

Shared LLU /SMPF repair [2/2]

Country	SLA target	SLG description
Italy	70% in 1 working day; 95% in 2 working days	GBP4.26 per day of delay; maximum GBP85.27
Norway	90% of requests within approx. 1 business day; 100% of requests within 5 business days	GBP0.36 (6% of the subscription price) per day of delay, max 60 days
Portugal	95% of requests served within 28/8/12 hours for standard /Premium 1/Premium 2; 100% of requests served within 8/12 hours for Urgent 1/Urgent 2	GBP7.67/9.8/11.93 per 1 hour of delay for standard /Premium 1/Premium 2; GBP7.67 per 1 hour of delay for Urgent
Spain	<ul style="list-style-type: none"> error of high priority (defined in the contract) : fixed in 6h; error of medium priority: fixed in 24h; error of low priority: fixed in 72h 	Penalty depends on various factors such as geographical zone etc.
Sweden	12/24 hours depending on product	GBP1.6 (5% of quarterly subscription fee) per every 3 days of delay, with maximum charge equal to subscription fee per one quarter

Shared LLU repair summary: Openreach SLA/SLG looks quite relaxed compared with peers



Observations on shared LLU / SMPF - repair

- Openreach SLAs look about average but penalties look relaxed compared with others
- Openreach penalties are tied to monthly value of the shared LLU rental, as is the case with Belgacom, Orange, Telenor and Telia.
- Where penalties are not tied explicitly to the value of the shared LLU/SMPF subscription, the relative value of the penalty is higher than for full LLU/MPF.
- PT's penalties are effectively 24x higher as the monthly rental is related to each extra **hour** of delay.
- A1 Telekom Austria shared LLU is not in practice commercially used.

Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

WLR

LLU (MPF)

LLU (SMPF)

FTTC/P (VULA)

ISDN 2

ISDN 30

EMP

Force majeure

Openreach FTTC/P activation: only activation SLA is comparable to that of equivalent products (VULA) in other countries

Country	Number of products	Activation/order types			
		Activation delay	Missed appointment	Disconnection in Error	Other
UK	One (GEA – FTTC)	✓	✓	✓	
Austria	Four	✓			✓
Denmark	One	✓			

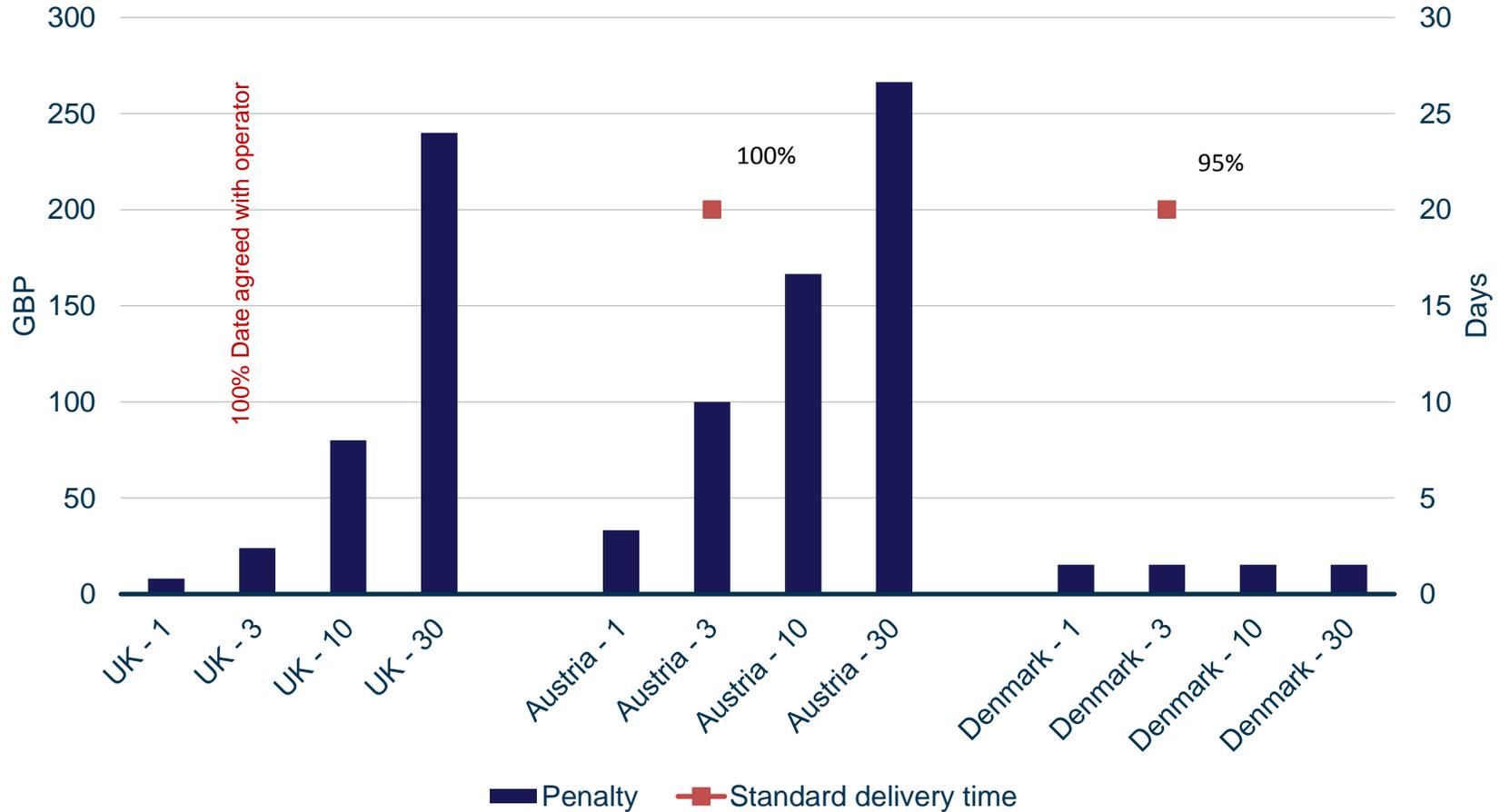
Telecom Italia and eircom have draft VULA offers

FTTC/P activation: activation delay much shorter than other countries where equivalent products are available

Country	SLA target	SLG description
UK	<ul style="list-style-type: none"> Agreed with operator 	<ul style="list-style-type: none"> GBP8 Per day (or part thereof) for each line late versus SLA. Capped at 60 days per line
Austria	<ul style="list-style-type: none"> =/< 20 days 	<ul style="list-style-type: none"> GBP33.30 Per working day for the first five days, then this amount is charged per week
Denmark	<ul style="list-style-type: none"> agreed with client Standard: 95% of delivery =/< 20 days without technician's visit, inc voice service activation: 95% of delivery =/< 18 days without technician's visit, excl voice service activation: 95% of delivery =/< 10 days 	<ul style="list-style-type: none"> GBP15.26 per VULA compound that has been affected by the failure

Telecom Italia and eircom have draft VULA offers

FTTC/P activation summary: Openreach SLG penalty is comparable to Telekom Austria

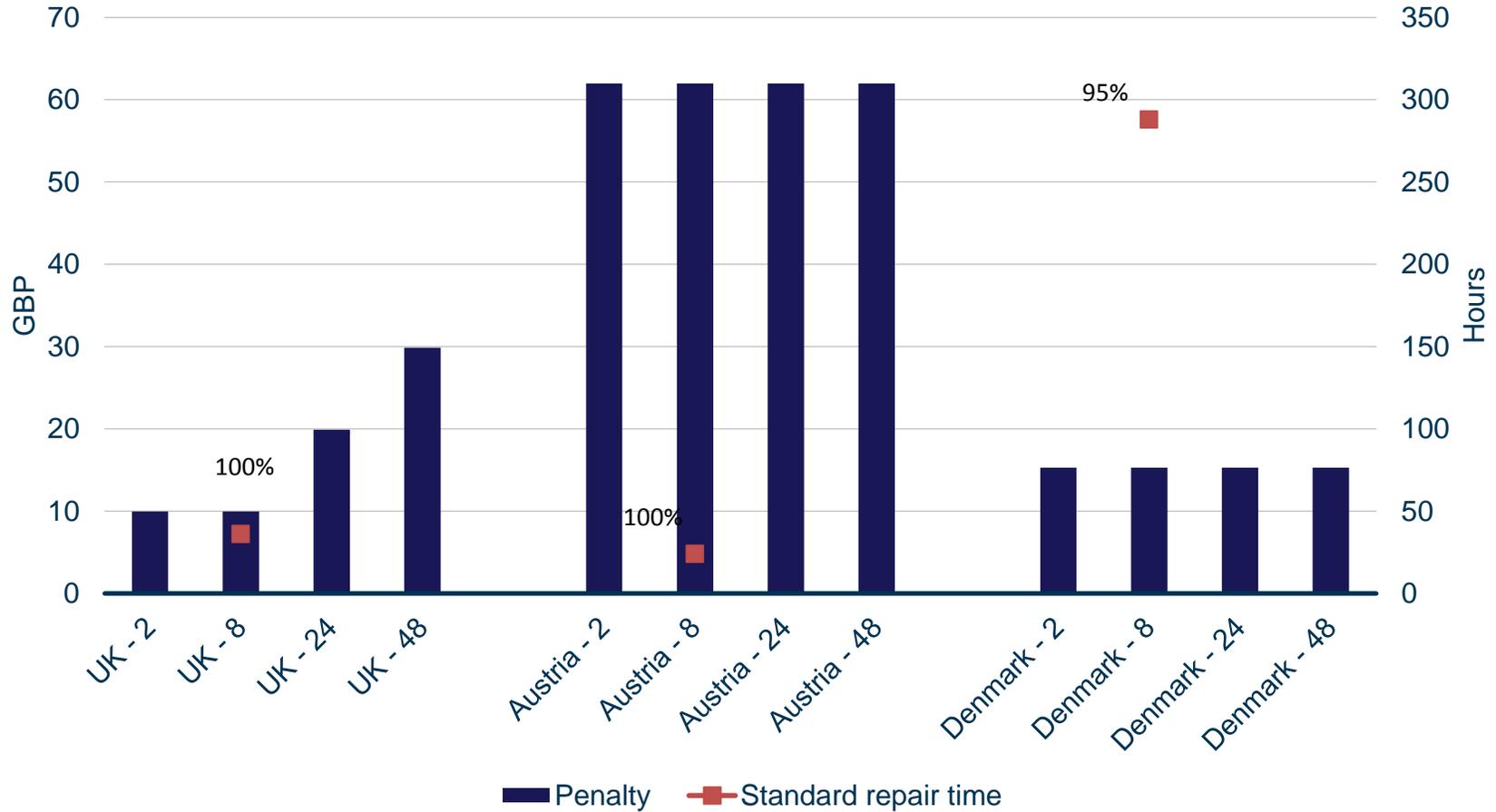


FTTC/P repair: repair delay SLA not pre-defined, unlike the three other countries where equivalent products are available

Country	Number of products	SLA target	SLG description
UK	One (GEA – FTTC)	<p>Level 2 (default for LLU): Clearance by 23.59 next working day</p> <p>Level 3: Clearance by 23:59 the same day if the fault was reported before 12:59; Clearance by 12:59 if the fault was reported between 13:00 and 23:59 the day before</p> <p>Level 4: Clear within 6 hours, any time of day, any day of the year.</p>	<ul style="list-style-type: none"> 1 month line rental per day (or part thereof) for each line late versus the SLA. Capped at 60 days per line: basic 80/20 product is GBP9.95 per month (same for FTTP and FTTC)
Austria	Four	<ul style="list-style-type: none"> 24/8/6 hours depending on product 	<ul style="list-style-type: none"> GBP61.97/184.19/245.59 for each of the three times the SLA delay time (3 times 6/824 hours); additional penalty for additional delay
Denmark	One	<ul style="list-style-type: none"> 95% of errors are fixed in 12 calendar days after error reporting 	<ul style="list-style-type: none"> GBP15.26 per VULA compound that has been affected by the failure

Telecom Italia and eircom have draft VULA offers

FTTC/P repair summary



Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

WLR

LLU (MPF)

LLU (SMPF)

FTTC/P

ISDN 2

ISDN 30

EMP

Force majeure

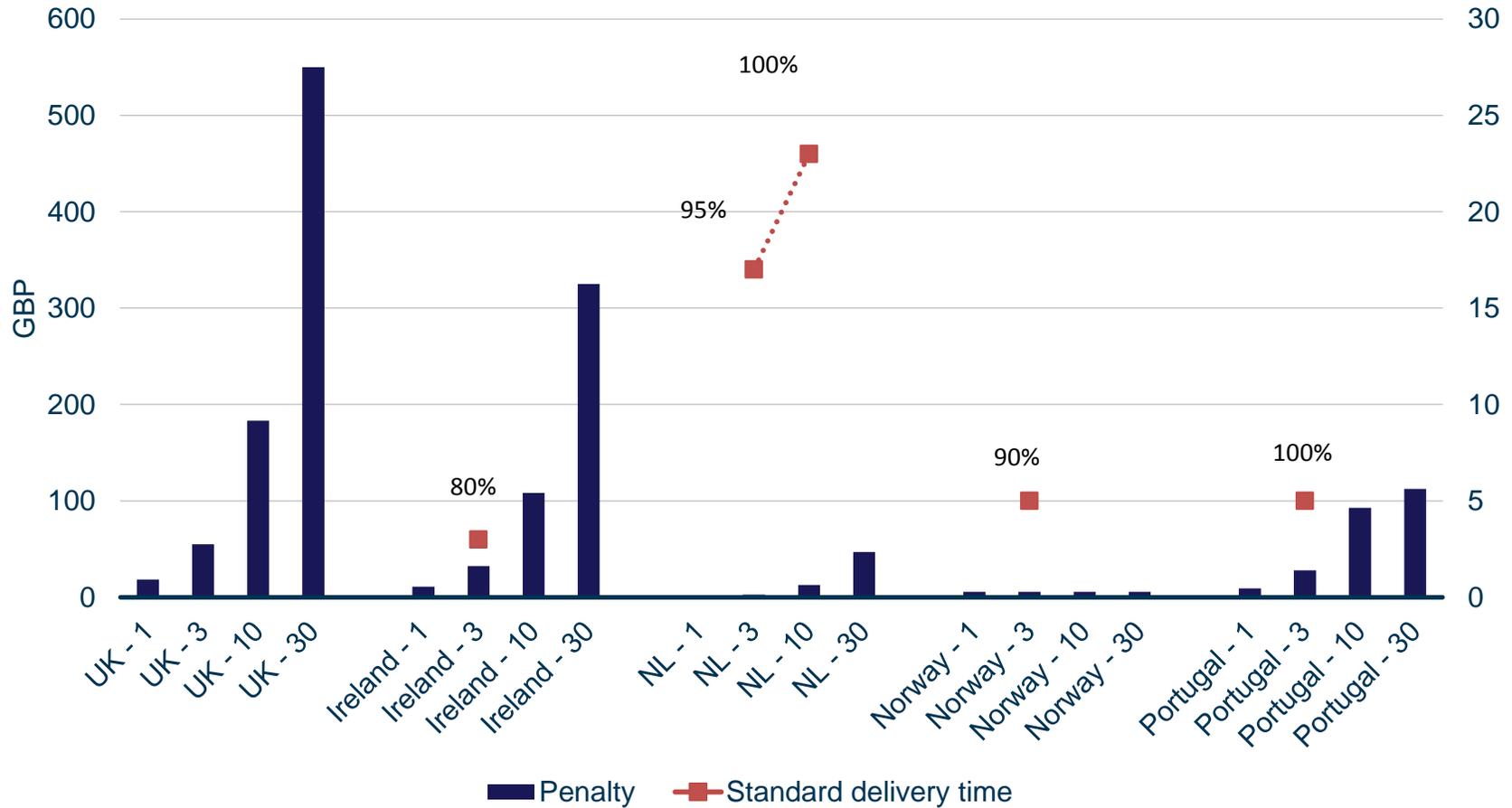
Openreach ISDN 2 activation: only activation SLA is comparable to other countries

Country	Number of products	Activation/order types				
		Activation and transfer delay	Missed appointment	Maximum appointment availability lead-time (engineer required)	Disconnection in Error	Other
UK	One (ISDN2)	✓	✓	✓	✓	
Ireland	One	✓				✓
Netherlands	Two	✓				✓
Norway	One	✓				
Portugal	One	✓				

Openreach ISDN 2 activation: activation delay is not pre-defined, unlike in other countries

Country	SLA target	SLG description
UK	<ul style="list-style-type: none"> Agreed with the client 	<ul style="list-style-type: none"> GBP18.33 (1 month line rental) per day (or part thereof) for each line. Capped at 60 days per line/channel
Ireland	<ul style="list-style-type: none"> existing line: 80% of requests completed in 1 day; 99% of requests completed in 3 days new line: 80% of requests completed in 10 days 	<ul style="list-style-type: none"> GBP10.83 per account affected per Working Day or part thereof of delay.
Netherlands	<ul style="list-style-type: none"> 95% : =< 17 days (standard delivery time) 100% : =< 23 days 	GBP0.85 per order per day of delay (for delivery between the 18 th and 23 rd day); GBP4.26 per order for the 24 th day and additional GBP1.71 per additional day (>= 25 days)
Norway	<ul style="list-style-type: none"> 90% delivered in 5 business days 	<ul style="list-style-type: none"> GBP5.66
Portugal	<ul style="list-style-type: none"> 100% delivered in 5 working days 	<ul style="list-style-type: none"> GBP9.26 Per 1 day of delay for delays up to 10 days; (1/22)*Monthly subscription (GBP21.72) per day for delays more than 10 days; with the maximum charge of monthly subscription

ISDN 2 activation summary



Openreach ISDN 2 repair: only activation SLA is comparable to other countries

Country	Number of products	Repair types	
		Repair	Missed appointment
UK	One	✓	✓
Ireland	One	✓	
Netherlands	Two	✓	
Norway	Three	✓	
Portugal	Two	✓	

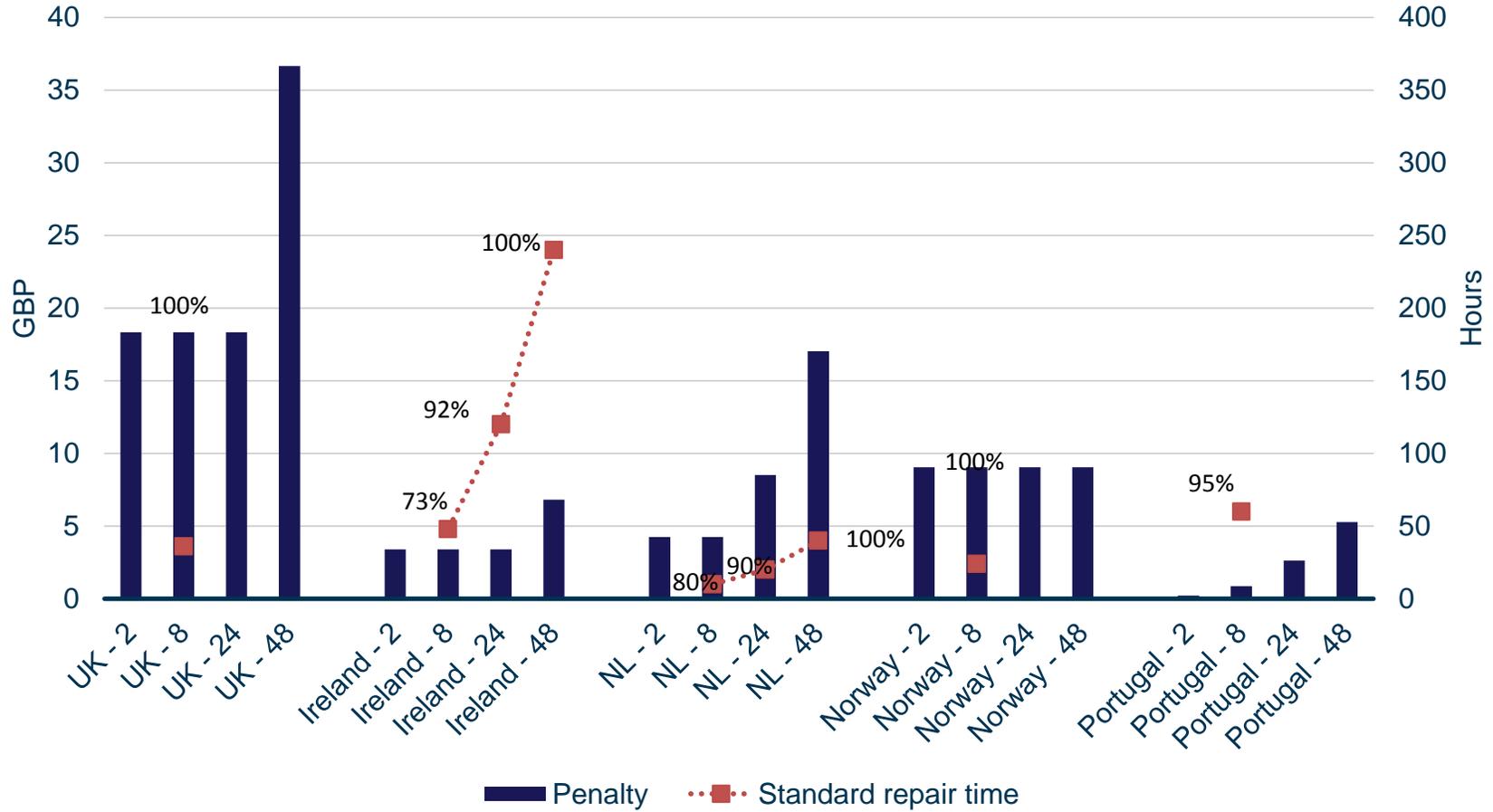
ISDN 2 repair: [1/2]

Country	SLA target	SLG description
UK	<p>Level 2 (default for ISDN2 WLR): Clearance by 23.59 next working day</p> <p>Level 3: Clearance by 23:59 the same day if the fault was reported before 12:59; Clearance by 12:59 if the fault was reported between 13:00 and 23:59 the day before</p> <p>Level 4: Clear within 6 hours, any time of day, any day of the year.</p>	<ul style="list-style-type: none"> • GBP18.33 (1 month line rental) per day (or part thereof) for each line. Capped at 60 days per line/channel
Ireland	<ul style="list-style-type: none"> • 73% of repair completed in 2 working days • 92% of repair completed in 5 working days • 100% of repair completed 10 working days 	<p>GBP3.41 per day for the first 2 days; GBP5.97 per day for the next 3 days; GBP8.53 per day for further delay.</p>
Netherlands	<p>Basic:</p> <ul style="list-style-type: none"> • 80% within 10 working hours for lines over ground and 1 working day for lines under ground; • 95% within 20 working hours for lines over ground and 2 working day for lines under ground; • 100% within 40 working hours for lines over ground and 5 working day for lines under ground <p>Premium:</p> <ul style="list-style-type: none"> • 90% within 8 working hours; • 95% within 24 working hours; • 100% within 48 working hours 	<p>Basic:</p> <ul style="list-style-type: none"> • GBP4.26 per each 12h of service delay <p>Premium:</p> <ul style="list-style-type: none"> • GBP8.53 per each 24h of service delay

ISDN 2 repair: [2/2]

Country	SLA target	SLG description
Norway	approx. within 1 working day for type A errors (service stopped) approx. within 2 working days for type B errors (quality of the service reduced)	GBP9.05
Portugal	<ul style="list-style-type: none">95% of requests are served within 2 working days	<ul style="list-style-type: none">GBP0.11 Per 1h of delay, with maximum of monthly subscription per line

ISDN 2 repair summary



Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

WLR

LLU (MPF)

LLU (SMPF)

FTTC/P

ISDN 2

ISDN 30

EMP

Force majeure

ISDN 30 activation: only activation SLA is comparable to other countries

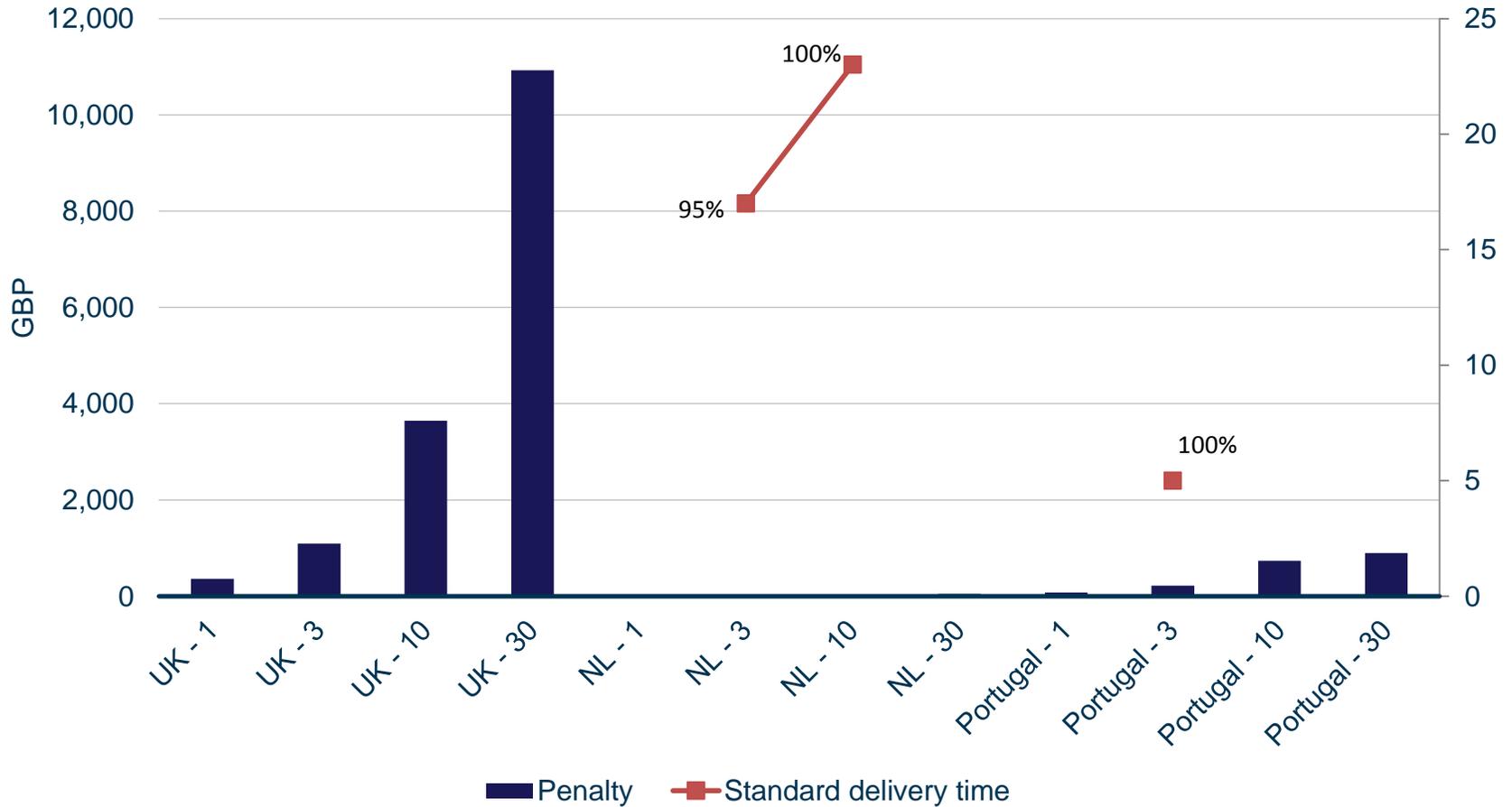
Country	Number of products	Activation/order types			
		Activation and transfer delay	Missed appointment	Disconnection in Error	Other
UK	One	✓	✓	✓	
Netherlands	Two	✓			
Portugal	One	✓			

ISDN 30 activation

Country	SLA target	SLG description
UK	<ul style="list-style-type: none"> Agreed with the client 	<ul style="list-style-type: none"> GBP364.25 (1 month line rental) per day (or part thereof) for each line. Capped at 60 days per line/channel
Netherlands	<ul style="list-style-type: none"> 95% : \leq 17 days (standard delivery time) 100% : \leq 23 days 	GBP0.85 per order per day of delay (for delivery between the 18 th and 23 rd day); GBP4.26 per order for the 24 th day and additional GBP1.71 per additional day (\geq 25 days)
Portugal	<ul style="list-style-type: none"> 100% delivered in 5 working days 	<ul style="list-style-type: none"> GBP73.74 Per 1 day of delay for delays up to 10 days; (1/22)*Monthly subscription (GBP172.96) per day for delays more than 10 days; with the maximum charge of monthly subscription

Eircom appears to offer ISDN30 only as a newly installed line

ISDN30 activation summary

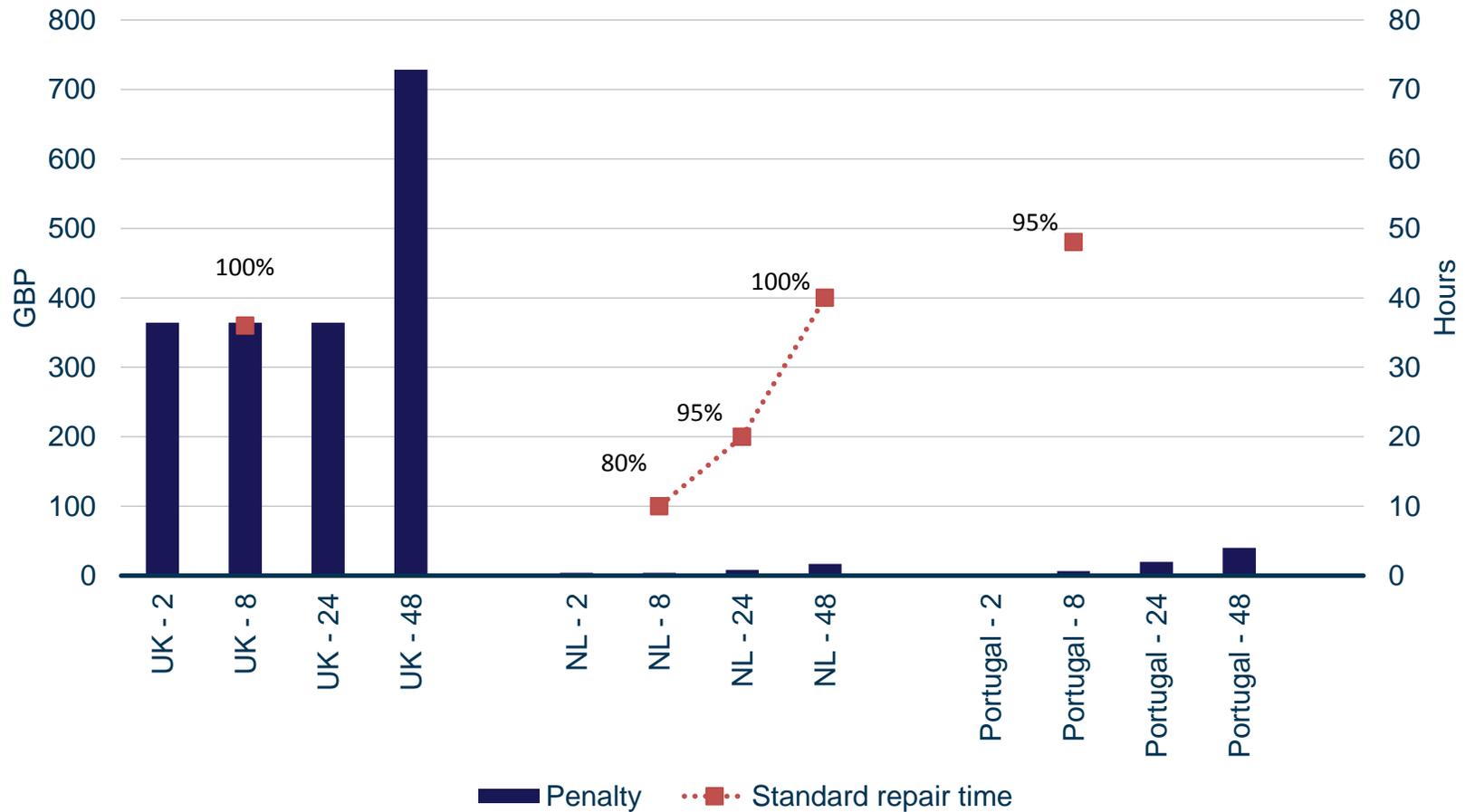


ISDN 30 repair

Country	Number of products	SLA target	SLG description
UK	One	<p>Level 2 (default for ISDN30 WLR): Clearance by 23.59 next working day</p> <p>Level 3: Clearance by 23:59 the same day if the fault was reported before 12:59; Clearance by 12:59 if the fault was reported between 13:00 and 23:59 the day before</p> <p>Level 4: Clear within 6 hours, any time of day, any day of the year.</p>	GBP364.25 (1 month line rental) per day (or part thereof) for each line late versus the SLA. Capped at 60 days per line
Netherlands	Two	<p>Basic:</p> <ul style="list-style-type: none"> • 80% within 10 working hours for lines over ground and 1 working day for lines under ground; • 95% within 20 working hours for lines over ground and 2 working day for lines under ground; • 100% within 40 working hours for lines over ground and 5 working day for lines under ground <p>Premium:</p> <ul style="list-style-type: none"> • 90% within 8 working hours; • 95% within 24 working hours; • 100% within 48 working hours 	<ul style="list-style-type: none"> • GBP4.26 per each 12h of service delay • GBP8.53 per each 24h of service delay
Portugal	One	95% of requests are served within 2 working days	GBP0.84 Per 1h of delay, with maximum of monthly subscription per line

Eircom appears to offer ISDN30 only as a newly installed line

ISDN30 repair summary



Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

WLR

LLU (MPF)

LLU (SMPF)

FTTC/P

ISDN 2

ISDN 30

EMP

Force majeure

Openreach has the most comprehensive SLA/SLG arrangement for EMP

- We have reviewed SLAs associated with the EMP (or similar) provided by operators. The only operators to describe their platform in detail are those in Belgium, Denmark, Ireland, the Netherlands and the UK.
- Only Belgium and the UK provide any sort of SLA
 - Belgium: “Belgacom endeavours to reach a maximum of 4 hours of unavailability per month, per e-tool and per type of access, excepted in the following cases (“Force majeure” and unavailability of the e-tool due to misuse performed by an operator), which will be excluded from the calculation.”
- In Ireland, eircom describes an escalation process, if an operator experiences problems with the ordering process, which involves sending an email to a customer service representative
- Apart from Openreach, none of the operators researched offer an SLG associated with the EMP SLAs
- Openreach has the most comprehensive SLA/SLG arrangement for platform (Equivalence Management Platform)

Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

KPI analysis

WLR

LLU (MPF)

LLU (SMPF)

FTTC/P

ISDN 2

ISDN 30

EMP

Force majeure

In Belgium, one per cent of the “worst cases” of copper and shared pair provisions are not included in compensation settlement

Belgium

- Belgacom’s SLA for raw copper and shared pair states that *The Service Level Agreement is not valid in situations of “Force Majeure”* (no specific details are provided for force majeure, apart from those below) *as defined in the “General Terms of Conditions”*
 - *This SLA guarantees 100 % of times. However all troubles can not be solved within these timeframes.*
 - *For repair, the percentage of non wrongful repair tickets for which a Beneficiary may request compensations for a specific month varies in function of the percentage of wrongful repair of the same Beneficiary and of the same month, according to the following :(% wrongful repair:% repair for which compensations are applicable): $X \leq 10\%$: 99%; $10\% < x \leq 20\%$: 95%; $X > 20\%$: 90%)*
 - *For provisioning, compensations will never be applicable to the 1% of the orders representing the worst cases*

Denmark

- In the repair SLA for WLR, it states that TDC may not be able to debug when there is:
 - *situations covered by force majeure*
 - *special physical conditions that obstruct or hinder TDC's debugging*
 - *serious cable failure and other serious errors in TDC's equipment and installations,*
 - *which include more customers and where it is not practicable to accelerate*
 - *conditions which involve particularly large time (obtaining digging permits, need for expropriation, regulatory requirements for coordination with other utility owners, ban from public authorities, etc..)*
 - *failure of supplies from TDC's suppliers,*
 - *error caused by manufacturing defects or similar equipment, hardware and / or software, which occurs in all products of the same batch, and where the error therefore escalated to TDC's supplier.*

Italy provides specific examples of force majeure, Ireland does not

Ireland

- *Circumstances whereby a fault cannot be progressed on behalf of a [CSP for LLU], and the fault is parked are outlined as follows:*
 - *eircom cannot get co-operation from the Access Seeker with testing the line*
 - *When a fault ticket receives an Unconfirmed Clear status, it will be parked.*
 - *Where an engineer is dispatched and cannot get access to the end user premises*
 - *Where to proceed would result in a health and safety risk, avoidance of which could not have been realistically predicted by eircom.*
 - *If it is requested by the access seeker and/or end user*
 - *Where a third party, other than eircom contracted entities, restricts eircom from working on resolution of the fault.*
 - *Force Majeure*
- Above is similar for WLR

Italy

- For WLR, lines may not be provisioned in time due to a force majeure. Telecom Italia defines force majeure to include:
 - *Natural disasters (floods, earthquakes, etc.).*
 - *National strikes*
 - *Local holidays not recognized by the operator.*
- Similar is true for WLR repairs. Telecom Italia may not fulfil its repair times due to:
 - *force majeure*
 - *failures caused by third parties;*
 - *due to unavailability of the customer or client*
 - *WLR operator failing to provide the right documentation*
 - *lines in "special areas"*
- Similar statements above also apply to LLU

Portugal provides specific examples of force majeure, Ireland does not

Netherlands

- KPN states that SLA performance for LLU and WLR may be adversely affected by a force majeure. KPN does not provide any details as to what may constitute a force majeure
- The periods specified in the agreed performance levels and availabilities be extended or declared not applicable if there are circumstances in which Service Provider Customer Service or may rely on force majeure, for the duration of the force majeure proportionately.

Portugal

- Portugal Telecom provides compensation for not achieving LLU SLA commitments, unless there is a force majeure. Force majeure include:
 - *unforeseeable and unavoidable, whose effects are beyond the control or the circumstances surrounding PT or the Beneficiary that prevent, wholly or partially, permanently or temporarily, to meet its obligations in particular:*
 - *extreme weather conditions (e.g. occurrence of Waterspout, typhoons, lightning / lightning, extreme floods and high winds)*
 - *acts of third parties (e.g. third party actions on equipment, network resources or infrastructure PT, resulting in works, accidents or others)*
 - *theft / larceny (e.g. stocks theft / pilferage of equipment, network resources or infrastructure PT)*
 - *vandalism (e.g. actions of vandalism or sabotage, equipment, network resources or infrastructure, including e.g. shots).*

LLU provision and repair SLAs in France are not adhered to in certain circumstances, including force majeure

France

- In France, LLU provisions adhere to SLAs apart from the following circumstances:
 - Volumes exceed agreed levels
 - Cases of “hardship” or force majeure (no definition provided)
 - Exceptional cases
 - Copper needs to be installed, subject to availability at the head-end
- Similarly, LLU repairs adhere to SLAs apart from the following circumstances:
 - Force majeure or “exceptional” difficulty (no definition provided)
 - If a repair requires access to the customer’s site
 - If the information provided does not allow France Telecom to locate the effective fault

Contents

Introduction to project, objectives and approach

Executive summary

SLA and SLG analysis

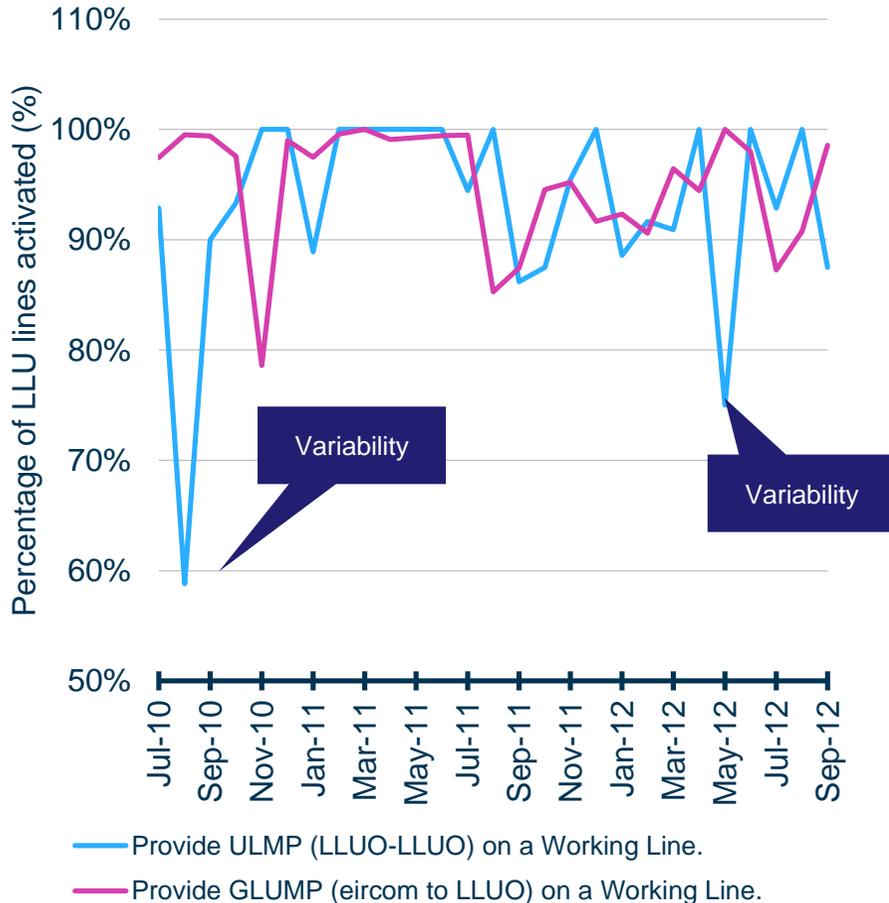
KPI analysis

KPI analysis: Summary

- We have analysed KPI data for six countries:
 - Belgium: insufficient data to analyse/compare with Openreach data
 - Denmark: see following slides
 - Ireland: see following slides
 - Norway: see following slides
 - Spain: insufficient data to analyse/compare with Openreach data
 - Sweden: insufficient LLU data, WLR see following slides
- KPI data for other countries was not available (Austria, France, Germany, Italy, Netherlands, Portugal)
- We have analysed activation and repairs performance for WLR/LLU, where available. None of the data we have analysed indicate any SLA performance seasonality (KPIs that show consistent seasonality would, for example, show a consistent drop in percentage of lines deployed on time during 1Q of each year).
 - we have also checked whether there was a dip in performance in line with that experienced by Openreach in 2012, we could not identify such a correlation (please see slides that follow)
- It should be noted that the KPI data analysed for Belgium, Denmark, Norway and Sweden shows that operators do not always achieve their SLA targets (provision and repair) and there is significant variability in their performance
 - the slides that follow provide some variability examples.

The performance of other operators shows no overlap with that of Openreach, although variability of performance is a common theme

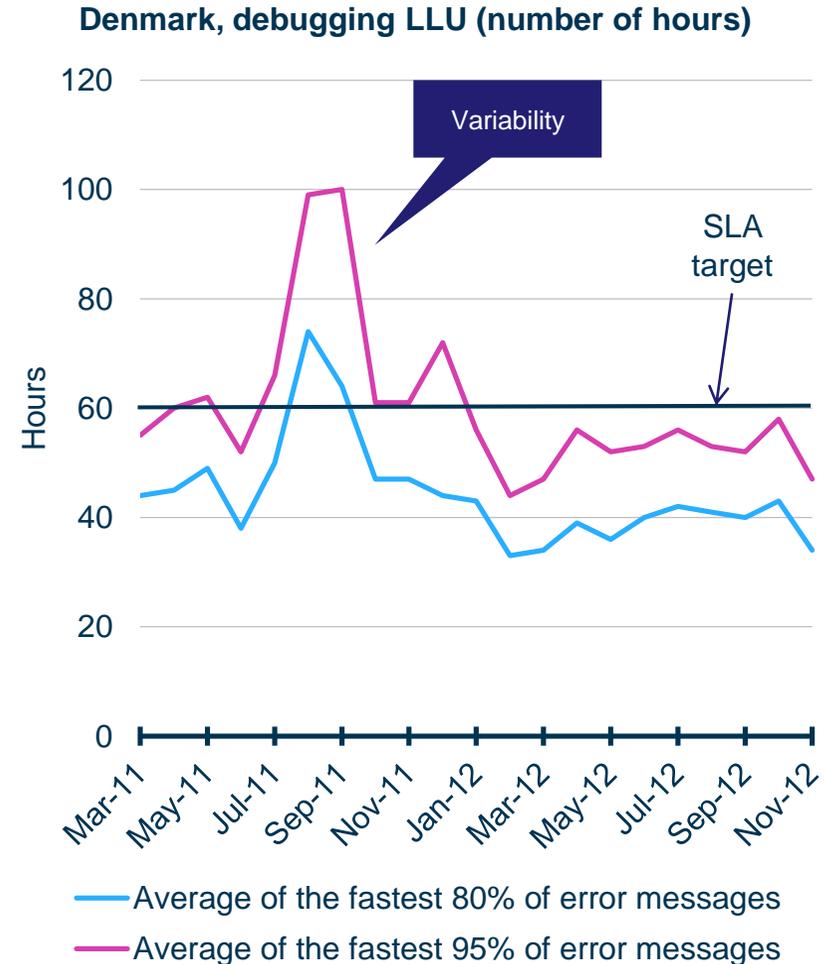
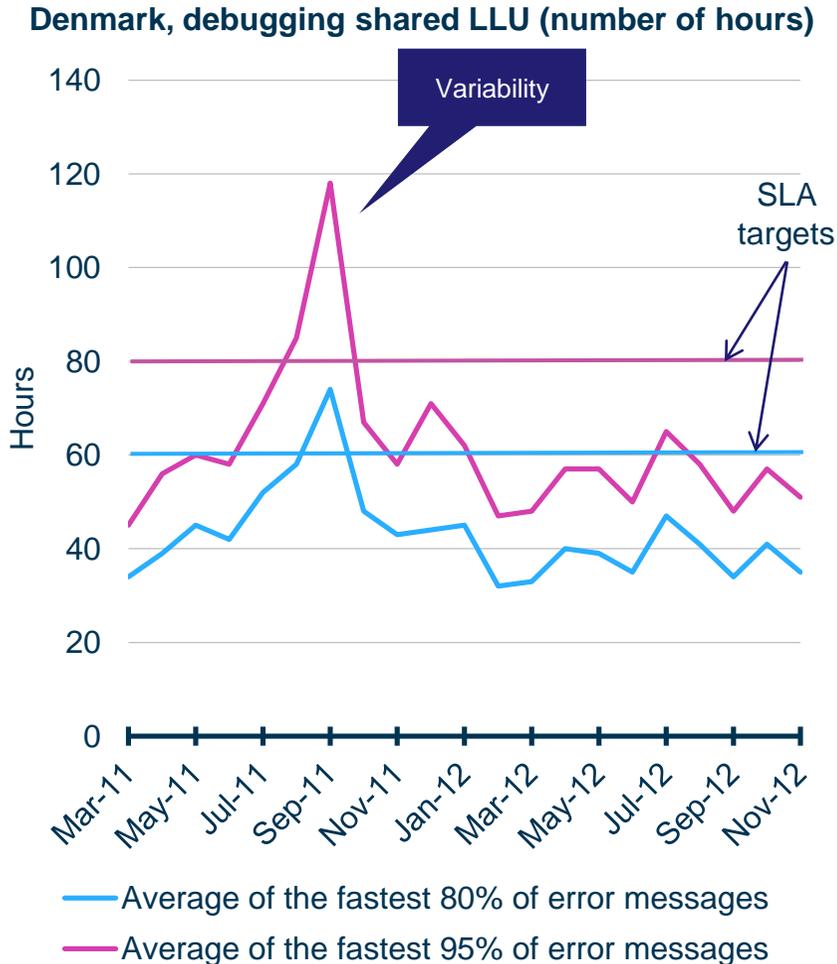
Ireland, LLU provision SLA achieved



Ireland, LLU percentage of line faults cleared, by working days

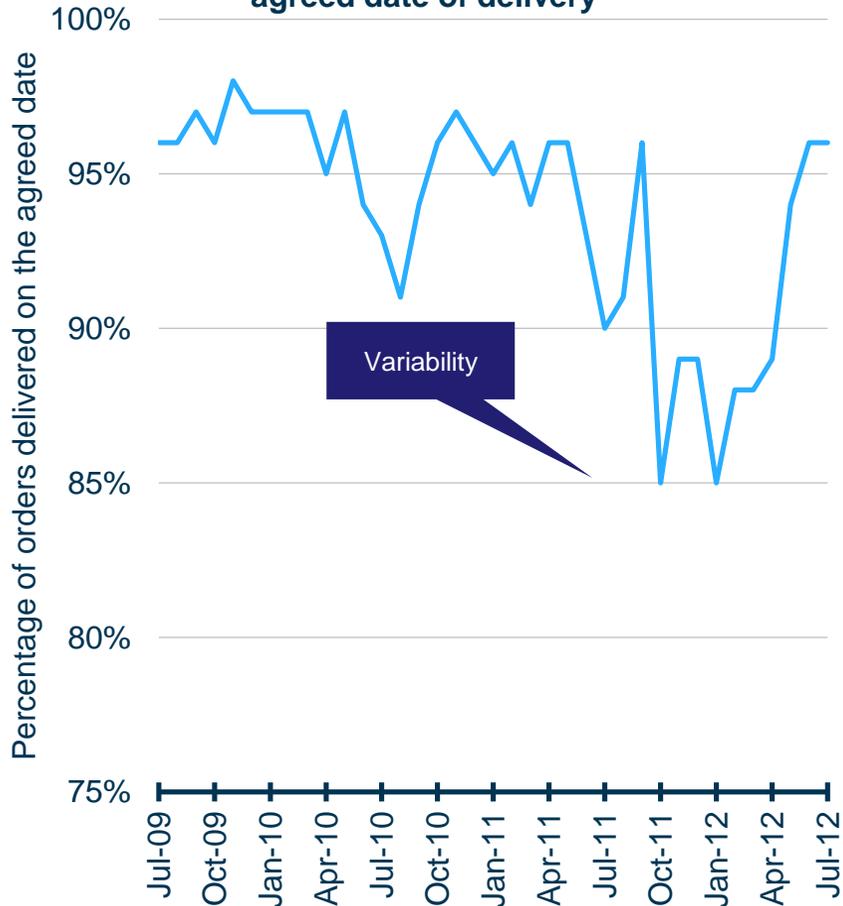


There is no discernible seasonality for LLU debugging in Denmark

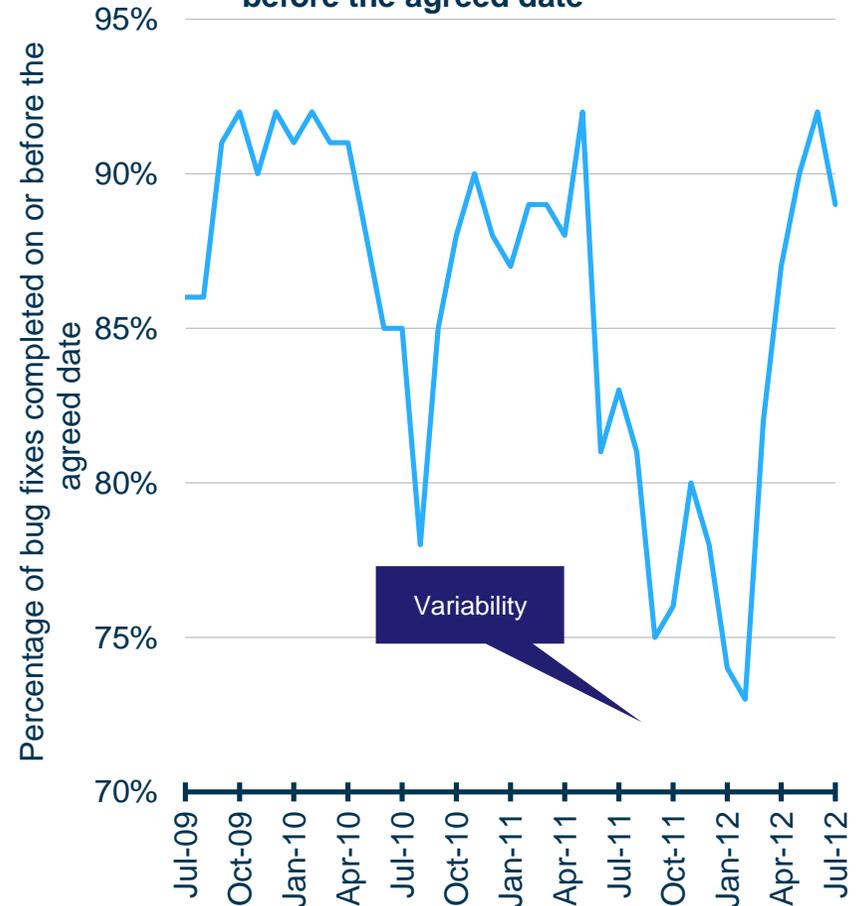


In Norway there is a correlation between the performance of DSL delivery and bug fixes, but no regular seasonality

Norway, percentage of DSL deliveries on or before the agreed date of delivery

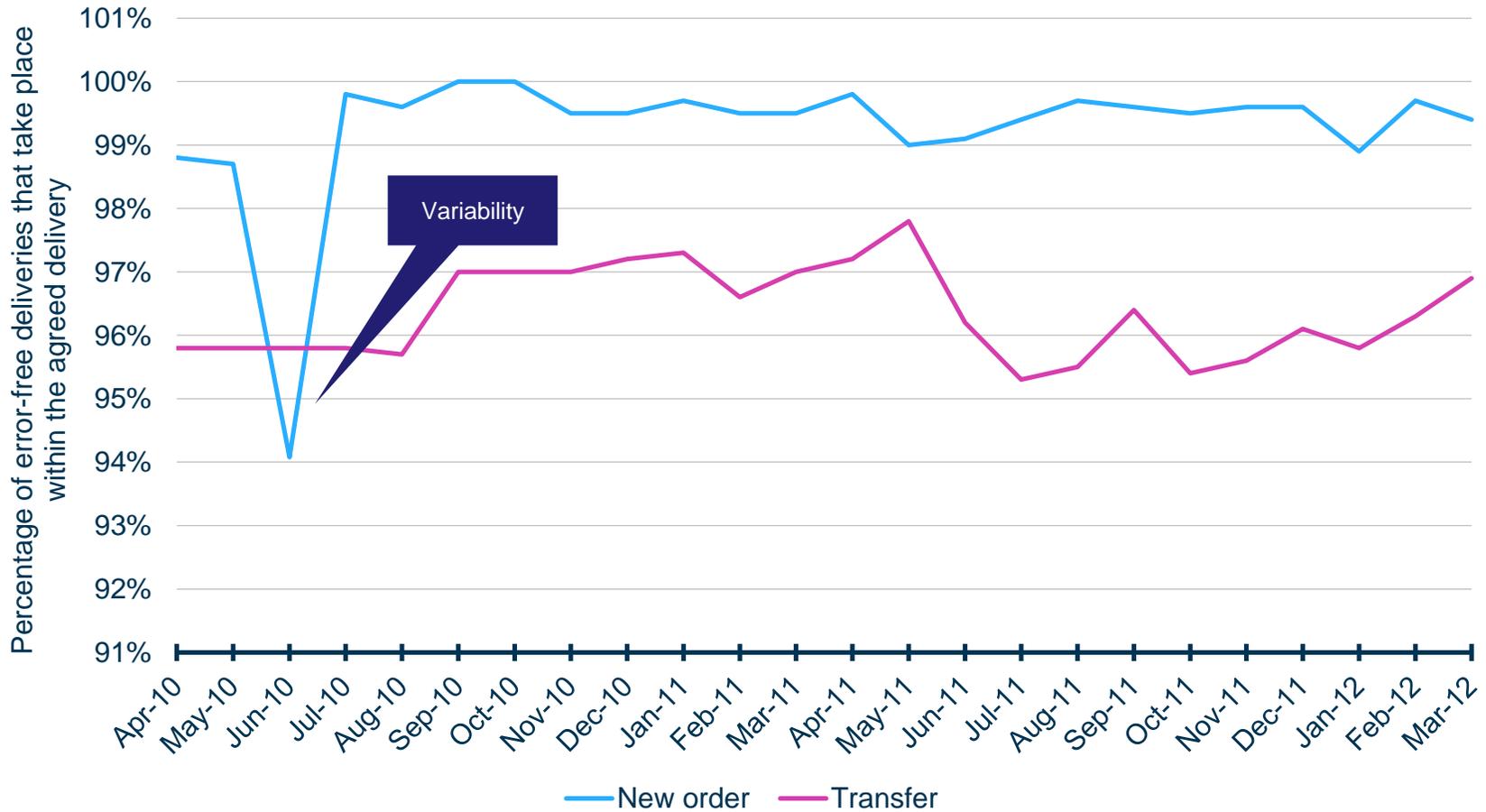


Norway, percentage of DSL bug fixes completed on or before the agreed date



In Sweden, WLR new order and transfer activation KPIs do not demonstrate any seasonality

Sweden, percentage of error-free WLR deliveries that take place within the agreed delivery



Contact details

Gareth Williams

Senior Analyst

Gareth.williams@analysismason.com

Boston

Tel: +1 202 331 3080
Fax: +1 202 331 3083
boston@analysismason.com

Cambridge

Tel: +44 (0)845 600 5244
Fax: +44 (0)1223 460866
cambridge@analysismason.com

Dubai

Tel: +971 (0)4 446 7473
Fax: +971 (0)4 446 9827
dubai@analysismason.com

Dublin

Tel: +353 (0)1 602 4755
Fax: +353 (0)1 602 4777
dublin@analysismason.com

Edinburgh

Tel: +44 (0)845 600 5244
Fax: +44 (0)131 443 9944
edinburgh@analysismason.com

Johannesburg

Tel: +27 11 666 4786
Fax: +27 11 666 4788
johannesburg@analysismason.com

London

Tel: +44 (0)845 600 5244
Fax: +44 (0)20 7395 9001
london@analysismason.com

Madrid

Tel: +34 91 399 5016
Fax: +34 91 451 8071
madrid@analysismason.com

Manchester

Tel: +44 (0)845 600 5244
Fax: +44 (0)161 877 7810
manchester@analysismason.com

Milan

Tel: +39 02 76 31 88 34
Fax: +39 02 36 50 45 50
milan@analysismason.com

New Delhi

Tel: +91 124 4501860
newdelhi@analysismason.com

Paris

Tel: +33 (0)1 72 71 96 96
Fax: +33 (0)1 72 71 96 97
paris@analysismason.com

Singapore

Tel: +65 6493 6038
Fax: +65 6720 6038
singapore@analysismason.com