The Approach to Number Portability in Bahrain

An Overview

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“The views expressed in this presentation are the views of the author and do not necessarily reflect those of Batelco. “

Overview

- Introduction and Background
- The TRA's Draft NP Regulation
- Concerns with the Proposed Approach to NP
- Concluding Remarks

Introduction and Background

- NP is an ongoing subject in numerous countries around the world – Bahrain is no exception

- NP is intended to have a pro-competitive impact on a country's telecommunications sector and to generate benefits for society as a whole through:
  - elimination of most switching costs
  - facilitation of choice of operator; and
  - facilitation of competition between operators on price and non-price factors.

- BUT: NP comes at a cost, which needs to be carefully weighed against the mostly uncertain benefits – my last talk dealt with the Cost-Benefit and Economic Viability of NP in general

- The introduction of NP is anchored in the Bahrain Telecommunications Law under Sections 3(b)2, 3(c)1, and Section 40 – the law only requires the TRA to prove that there is "sufficient demand", which the TRA did by conducting a stated preference survey in August 2007

Chronology

- The TRA held an introductory industry working group workshop on 26 May 2008 (Mott MacDonald)
- The TRA published a Draft NP Regulation for both fixed and mobile NP (and Explanatory Document) on 14 October 2008 for public consultation
- The TRA set a deadline for implementation for fixed, mobile and universal numbers by 30 September 2009 and special service numbers by 31 December 2009
- Responses were submitted by relevant licensees by the deadline of 30 November 2008
- A report has not been published yet
- The implementation of NP has not yet commenced

Overview of the TRA's Draft Regulation

Legal Basis	Sufficient demand
Objective	As a "user right"
Requirements to provide NP	All operators to import and export – with exemptions
Routing	CDB-based ACQ routing but choice provided
Cost recovery and charging	Reciprocal charging; the recipient not the donor may levy a retail charge; costs and charges set
The porting process	Not specified – but porting time fixed and to be reduced after 2 years
Other requirements	CDB; CDB to cover additional services unrelated to NP; partial TRA funding (set-up costs of CDB); no winback
Enforcement and Penalties	Non-compliance is a license breach and subject to enforcement action

The Regulation: Requirements

- Centralized Data Base

- All licensed operators (LOs) shall implement NP who terminate calls to subscribers who are identified by the following:

  a) Fixed numbers (including services to fixed numbers by VoIP and fixed services provided under Universal Numbers)

  b) Mobile numbers and universal numbers (including Wimax numbers as of 2010)

  c) Special Services Numbers and Premium Rate Services Numbers

- Timing:
  - a) & b) by 30 September 2009
  - c) by 31 December 2009

The Regulation: Routing

- 5.1: Each LO that **originates** or carries a call to a ported number shall be responsible for ensuring that the call will be routed to the LO that serves the called number

- 5.2: Each block operator shall ensure that any calls to ported numbers within number blocks allocated to that operator shall be routed to the network that currently serves the called number and that the original Caller Line Identification (CLI) shall be unchanged by the re-routing process

The Regulation: Cost recovery and charging

- Each LO shall bear its own facilities and systems set-up costs
- Porting charging: recipient shall pay the Donor either a reciprocal charge set by negotiation (with a cap) or a maximum default reciprocal charge based on the “average reasonable volume dependent incremental per-Subscriber costs” incurred when a subscriber ports its number from the Donor to the Recipient
- The cap will be determined and updated for each type of portability
- Initial charges are:
  - BD 4 for mobile NP
  - BD 6 for fixed NP
  - BD 10 for special services and premium rate services NP
- The Donor shall **NOT CHARGE** the subscriber
- The Recipient **MAY CHARGE** the subscriber
- If **additional costs** incurred for routing calls due to incomplete routing information, the Recipient may charge the donor for those additional costs (an average across all calls received from the donor or individual per call charge)
- Maximum default charge for additional costs is determined by the TRA and set at BD 0.0025 per minute in the first instance

The Regulation: The porting process

- Subscriber will contact the Recipient Operator; no donor involvement (akin to CPS)
- Recipient Operator will need a VALID porting request form from the subscriber
- Communication and messages between Recipient and Donor via the Central Database
- Reasons to refuse porting:
  - Material errors in the porting request
  - Information required by 6.4 “specifications” is missing
  - The authorization information is incorrect (mismatch of account number and number to be ported)
- Porting time shall (in a first round) not exceed:
  - Fixed: 3 working days
  - Mobile: 2 working days
  - Special services and premium rate numbers: 5 working days
- Porting time to be shortened over time: Within 2 year not more than 1 working day

The Regulation: The porting process

- Identity of subscriber to be recorded by the Recipient
- Check shall be made by the Recipient Operator that requesting subscriber has been assigned of the number to be ported
- Post-pay accounts: the account number and the number to be ported shall be checked against each other by the Recipient Operator

The Regulation: Other requirements

- Recipient needs to receive a request from subscriber to initiate
- The Donor shall not engage in Winback at all
- Central Database to be established by the TRA, and will perform functions and services as defined in the Regulation and any specifications issued by the TRA under Art 4.6
- Set-up costs of Central Database are funded by the TRA. OPEX will need to be funded by the LOs through payments made directly to the TRA; the TRA will consult upon and issue a formula for payments by means of legal instrument
- TRA may appoint a third party administrator to establish or administer the Database; the TRA or third party shall measure the performance of all LOs against:
  - Number of porting requests
  - Number of refusals
  - Number of acceptances
  - Number of successful portings within required timescale
  - Number of successful portings outside the required timescale
  - Number of portings not followed through
  - Donor response time
  - Two most common reasons for refusal

The Regulation: Other requirements

- 14 days following the beginning of each Gregorian calendar quarter, the database administrator is to forward a report to the TRA with stats
- The Database shall provide a service accessible over the internet for subscribers to check which network the relevant number belongs to
- TRA reserves the right to EXEMPT LOs from the requirement to implement NP, given justification from the respective LO
- Newly licensed Operators (e.g. the 3rd mobile licensee) may request exemption for the first 2 years from the date of the award of the license

The Regulation: Enforcement and Penalties

- If failure to comply with the provisions of the Regulation, then LO is in breach of its License and Telco Law, and will be subject to enforcement action under the relevant provisions of the Telco Law

Concerns with the Proposed Approach to NP

- In general: “Cart before the horse” problem – endorsing a draft regulation that stipulates technology, charges and costs in the absence of any agreement on the technical solution, technical specifications and intra- and inter-operator processes is not possible

- More specifically:

  - **Legal Basis** – a stated preference survey is not sufficient from a public policy perspective
  - **Objective “User Right”** – contradictory given **exemption provisions**; real TRA objective is to “increase competition”, which requires a CBA (as presented in TRA Workshop by MottMacDonald)
  - **Proposed Implementation Timing** – simultaneous introduction of fixed and mobile NP and special numbers is drain on resources; also, fixed NP only makes sense when there is competition for incoming calls – do we need LLU first?
  - **Requirements** – most complex and expensive solution – CDB – not efficient given absence of full interconnection and choice of routing – CDB fulfills other functions not partial to NP

Concerns with the Proposed Approach to NP – cont'd

- **Cost Recovery and Charging and reciprocity** - given choice of routing, there will be uneven traffic and consequential cost burden on incumbents – need asymmetrical rates or compensation
- **Porting** - there is only **one possible minimum** which will need to be determined at the outset of defining and designing the process-, system-, networks-, applications- and resource requirements necessary to accommodate and implement NP
- **Other Requirements** - prohibition of winback fosters complacency; porting of universal numbers to either fixed or mobile creates significant billing issues, in particular if TRs are different

Concluding Remarks

- The implementation of NP is a non-trivial and complex exercise, involving large up-front costs
- The proposed approach by the TRA is not consistent and not suitable in all of its proposed parameters
- Further consideration should be given to:
  - Cost-Benefit of implementation
  - Current state of competition in both mobile and fixed telephony – sufficient demand?
  - Preconditions such as competition for incoming calls in the fixed market
  - Appropriate solution given current technologies
  - A more realistic time-frame for implementation
  - Current network architecture and interconnection arrangements
  - Applicability to All relevant Operators from the start – no exemption provisions
  - The new numbering plan
  - Industry ownership

THANK YOU!

Questions/Comments:

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Viability of Number Portability in Bahrain

A Cost-Benefit Perspective

30 th June 2008

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Overview

- Introduction and Background
- Observations on Bahrain Context
- Cost-Benefit Analysis of MNP
  - Typology of Benefits
  - Costs and Risks
  - CBA Results for Bahrain
  - Charging Principles
- Concluding Remarks

Introduction

- The NP debate is mainly focused on the “how” to implement NP – but what is the basis for NP implementation?
- EU established NP as a “basic consumer right”; NP mandated by Bahrain Telecommunications Regulatory Authority (“TRA”) on the basis that “sufficient demand” is established (S.40 Telco Law)
- In private enterprise, “sufficient demand” exists when it is profitable to supply
- NP is a case of Market Failure
  - No operator is going to introduce NP unilaterally
  - Cooperation of other carriers is a necessary condition
- Public Policy analogue to a business case for efficient decision-making is a Cost-Benefit Analysis (“CBA”)
- Step back: This talk is about “economic viability” of NP in general and whether an “NP mandate” can be justified based on a failed CBA test

Why require NP?

- Aim of NP: to *facilitate* (not drive) switching and thereby increase customer welfare
- “As a user right”: applies whatever the cost
- “To increase competition”: should be justified by CBA
- Bahrain: TRA has not yet determined what basis to apply
- Number Portability:
  - Should increase competition (???)
  - Competitiveness is willingness of operators to reduce prices or improve service to increase market share
  - Does not create competitiveness
  - Difficult to isolate the effects of NP and market is often dominated by effects of new entrants, i.e. what is the COUNTERFACTUAL?
  - Some implementations of MNP have been too poor to be effective, e.g. Germany, France and early UK

MNP Stats

Country	Operators	Penetration (%)	Competition	Awareness	Porting Time	% Porting
HK	5	125	V high	High	1.5	14.6
Finland	3	105	High	High	5	10.6
Spain	3	105	High	High	6	7.8
Australia	4	80	High	High	0.3	7.5
Ireland	3	102	High	High	0.2	6.5
Sweden	4	113	High	High	5	6.1
Belgium	3	86	Medium	High	2	4.6
Malta	2	80	Low	Medium	0.5	3.6
UK	5+	111	High	Low	7	2.5
France	3	78	Low	Low	30	0.6
Germany	4	91	Medium	Low	6 was long	0.4

Source: Mott MacDonald

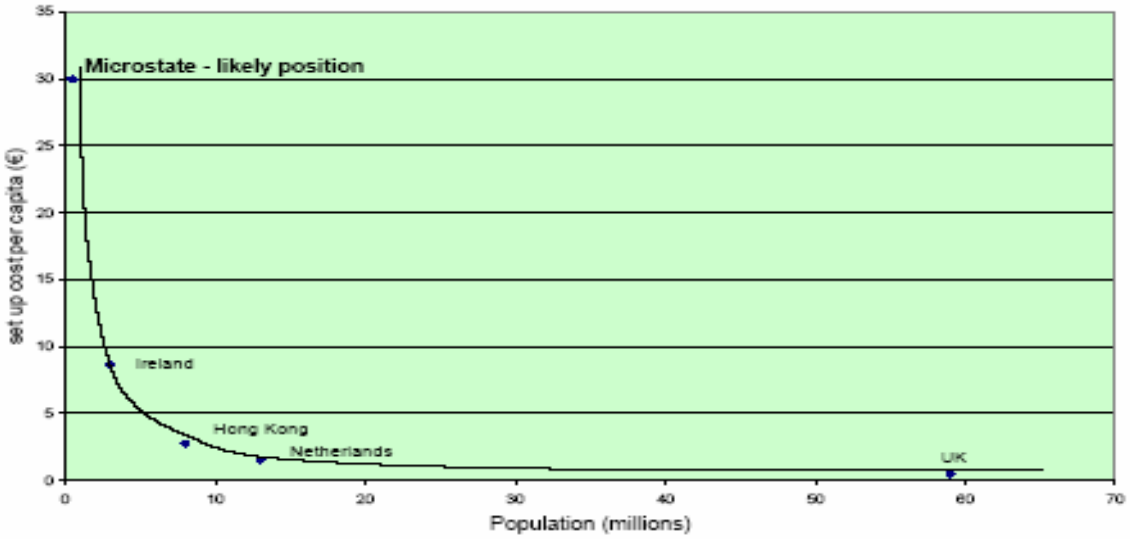
Costs-Benefit Analysis of MNP

- Batelco commissioned a CBA Study (Hibbard Consulting) to ascertain whether NP would bring net benefits to Bahrain
- Study concludes that for an ACQ as well as an OR solution net benefits are negative
- Implications:
  - NP should not be implemented based on the CBA outcome (based on the assumption that all operators carry the costs)
  - But if mandated: Is there an efficient funding and charging mechanism that justifies a “customer right to NP”? (arguments akin to USO public funding)
  - Determinative variables of NP net benefits (i.e. cost savings, lower prices, better services, increased competition) are:
  - market size; and
  - churn

Observations on Bahrain

- Bahrain is a “microstate”
  - Cost-effective solutions more important
- “Costs of developing, implementing and enforcing regulation varies relatively little with the size of the market being regulated while the benefits are typically proportionate to the size of the market” (Ovum/Indepen 2005)

Figure 6.2 The case of mobile number portability



Observations on Bahrain

- Mobile penetration is over 110%
  - Competition will intensify to get growth
- Churn is already high as prepaid outnumber post-paid 4:1
- Relaxation of mobile tariff controls
  - Will spur price competition
- Migration to NGN
- A significant segment of mobile users primarily use their mobile to call internationally via the very competitive calling card market
- Fewer barriers to switching than other countries; e.g. no contracts, no SIM-lock

Observations on Bahrain

- Dual SIM Cards. Perhaps, like Hong Kong
  - Few people in HK dual source because of a lack of MNP (Nera, 1998 MNP study)

- Proportion of mobile users with more than one SIM (Source: Nera, WIK, TRA):
  - Bahrain 17%
  - Italy 13%
  - Hong Kong 12%
  - Finland 7%

- “The majority of users manually changed their SIMs and on average considered the choice of SIM for approx. 50% to 70% of their calls” (WIK Study for EU)

CBA: Analytical Model

- Study looked at the cost structures associated with ACQ, OR and Temporary Diversion (“TD” – non-porting solution / bridge model)
- Benefit types to
  - 1A customers who switch w/o NP
  - 1B customer who switch due to NP
  - 2 all customers due to increased competition
  - 3 callers who avoid search costs
- Sanity checked against other studies
- Churn will be impacted by many other factors
- Modeled MNP only as the most complex case

CBA Analytical Model: Benefits

- Type 1 are “private” benefits” that accrue only to those who port
  - If there is insufficient demand, the CBA test fails
- Types 2 and 3 are “public benefits”
  - Previous studies suggest these are small and / or controversial
- Customer costs due to using MNP are treated as “negative benefits”

CBA Analytical Model: Benefits cont'd

- Type 1A: Benefits to those who change operator
  - Saved cost of telling of number change
  - Saved cost of changing letterheads and signs
  - Saved cost of running parallel account to avoid losing incoming calls
- Type 1B: Benefits to those who change operator only with portability
  - Lower prices
  - Better services
- Everyone porting has Type 1A, some have 1B as well

CBA Analytical Model: Benefits cont'd

- Type 2: Increased competition
  - Economists cannot calculate it, widely differing approaches
  - Problem is that cannot distinguish between changes in profits that only transfer benefit and increased efficiency that adds benefit
- Type 3: Reduced costs for caller
  - Saves changing address books
  - Saves wasted calls
  - Saves time finding new number
- Benefits are proportionate to the number of portings

CBA Analytical Model: Costs and Risks

Each of the 3 technical options examined have different impacts on:

- Set-up costs
  - Limited economies of scale (independent of number of portings)
- On-going costs
- Porting costs (per port)
- Conveyance costs (additional costs per call)
- Loss of Tariff Transparency also a factor, in particular where termination rates are not regulated

CBA Analytical Model: Costs and Risks cont'd

- Adapting legacy networks and existing operational support systems (OSSs) for NP is expensive because they rely on number block allocation
  - E.g. only prefix is used to determine call-type, provider, location, routing and charging
- Costs incurred / saved by callers are treated as negative / positive benefits
- Costs are imposed on callers by differences in mobile termination rates and / or on-net vs off-net pricing

CBA Analytical Model: Costs and Risks cont'd

- International Experience has highlighted a number of matters with NP including:
  - Costs of OSS are significant and can be an order of magnitude greater (or larger) than network implementation costs
  - The complexity of NP is normally underestimated, particularly in establishing inter and intra provider rules and processes
  - Planning, development and implementation timeframes are frequently underestimated – 2 yrs + is often required
  - Consumer demand is often overestimated

Other CBA Studies

- The most detailed CBA studies publicly available are
  - Hong Kong (Nera/Smith 1998)
  - UK (Ovum 1997)
- HK study not relevant on costs as FNP was already in place and the incremental costs of MNP were small
- The UK study was for OR, which is going to be replaced by ACQ

CBA Summary Results

- CBA shows that the implementation of MNP is not in the national interest with either an ACQ or OR solution
- Fixed and variable costs considered under 3 scenarios
- NPV for both costs and benefits discounted over a period to 2017 at 8%
- Key driver of benefits is churn and port rates; analysis based on two porting scenarios:

	High Churn & Port Rates			Low Churn & Port Rates		
NPVs, USDm	**TD**	**OR**	**ACQ**	**TD**	**OR**	**ACQ**
Benefits						
Type 1A	$4	$22	$22	$1	$8	$8
Type 1B	$7	$21	$6	$3	$11	$3
Type 2						
Type 3	$6	$6	$6	$3	$3	$3
Total	$17	$49	$34	$8	$22	$14
Costs						
Set-up	$0.3	$8	$23	$0.3	$8	$23
Ongoing	$0.3	$7	$7	$0.3	$7	$7
Ports	$5	$58	$58	$2	$26	$26
Traffic	$0	$58	$59	$0	$27	$59
Total	$6	$132	$147	$3	$69	$115
Net MNP benefit	$11	-$82	-$113	$5	-$47	-$101

Source: Hibbard Consulting

- Low Churn and Port rate: increases from 7% to 11% and that port rates reaches 6% of mobile customers each year

- High Churn and Port rate: assumption that net churn rate doubles to 15% and the port rate achieves 14%

Charging Principles

- Costs of implementing MNP are ultimately borne by consumers
- The NPV needs to be positive and costs also need to be efficiently recovered
- Economic efficiency requires that users of a given resource or service pay for their usage in the presence of opportunity costs
- MNP = new service offered and normally revenues should cover costs (even under perfect competition MNP would not be offered free of charge, so that Donor and Recipient NWs should be allowed to charge)
- Only Type 1 customers cause the costs of MNP – so that incremental costs should be borne by Type 1 customers and fixed costs are recovered from all
- But: CBA shows that majority of benefits are Type 1 private benefits, suggesting that porting customers or their Recipient Network hosts should bear the full incremental costs
- An alternative would be a case for a public subsidy (TRA to fund) to cover fixed costs (natural monopoly efficient price setting)
- If borne by TRA, the distortion of technology choices would be minimised

Concluding Remarks

- Implementation of MNP is non-trivial and complex, involving large up-front fixed costs
- Appropriate way to test whether there is sufficient demand is by way of a CBA
- Overseas experience re: benefits is mixed: are customers really better off? What is the counterfactual? Alternatives?
- Demand for MNP in Bahrain likely to be lower, given that:
  - Poor take-up of CPS
  - Modern mobile phones make contact updating easy
  - Use of two SIM cards high (due to different pricing schemes)
  - Competition likely to be intense due to relative maturity of the market
- If NP mandate, appropriate public funding has to be secured to achieve efficient outcome

Concluding Remarks

THANK YOU

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