Bermuda Case Study

Innovation and Cost Saving in Number Portability

Summary

This case study describes the development of the very low cost but full functionality approach to number portability developed for Bermuda. It describes in particular how the RunMyProcess internet based process platform was used to develop the equivalent of a traditional number portability database at a small fraction of the normal cost.

Introduction

Telecom regulation in Bermuda moved to full liberalisation and "service freedom" in January 2013 with the issue of Integrated Communication Operating Licenses and the creation of the Bermuda Regulatory Authority (RAB). A requirement of the underlying Electronic Communications Act was the provision of number portability, although the details of the requirement were left for the Authority to determine. In January 2013 the Authority appointed Horrocks Technology to assist it with the development of a more detailed regulation for number portability taking particular account of the balance of costs and benefits in such a small jurisdiction since on average fewer than 10 ports per day were expected.

Bermuda has a population of around 65,000 with some 35,000 fixed subscribers and 70,000 mobile subscribers. At the start of 2013 there was one fixed operator Bermuda Telephone Company, for on-island telephone, and two mobile operators CellOne and Digicel. Since January 2013 internet service providers and off-island service providers have started to offer fixed services. Bermuda uses part of the North American Numbering Plan and has US-style interconnection arrangements with zero termination rates for both fixed and mobile for on-island traffic and retail receiving party pays for incoming calls to mobile. There are on-net discounts from the mobile operators. In view of the common arrangements for fixed and mobile there was interest in porting between fixed and mobile.

The Portability Solution

Horrocks Technology recommended the following approach and presented it in detail to the operators in workshops in spring 2013:

- Mobile portability would have to start in March 2014 with the networks ready for full testing a month earlier.

- Fixed portability would start four months after a formal request was made to BTC by another operator, but not before March 2014. BTC would have to implement portability to other operators within two months of receiving subsequent requests. Any operator who requested portability from BTC would have itself to provide portability on request to any other operator (ie by making the request to BTC it was deemed to opt in to the requirement for portability). This approach applied also to portability between fixed and mobile so mobile operators could request porting of fixed numbers from BTC. This approach was based on the initial UK (OFTEL) approach used before the EU required all operators to be able to export and import numbers irrespective of their size.

- There was no requirement to implement a central database, neither for the process of each port nor for the total list of ported numbers and which operator serves them however the operators could choose to implement such a database voluntarily. Each operator, however, was required to make available to other operators an up-to-date list of the ported numbers that it served so that other operators could use All Call Query routing.

- The originating operator for any call was responsible for ensuring that the call reached its destination correctly but did not have to implement All Call Query routing and could instead

route via the operator with the number block and rely on Onward Routing, but in this case would have to pay a transit charge with a portability supplement.

- Regular reporting of statistics to give RAB clear visibility of how well the system was working.

The approach to fixed portability made importing a number optional and so allowed operators to avoid the costs associated with importing if they did not see a commercial case for importing. So for example BTC was under no obligation to offer to import from a new entrant. This flexibility allowed BTC to avoid the costs of upgrading IT systems to handle numbers from number blocks that were not its own - potentially a large cost.

A central database was not required because it was expected that the minimum costs would be around $100k pa, due partly to the various software licences needed. Instead Horrocks Technology would assist the operators with the development of a simple and cheap porting process.

This approach was adopted with general consensus from the operators and the regulation was published in August 2013. A start date of March 2014 was set for mobile portability, with fixed portability due to start four months after an official request being made of BTC.

The development of a "cloud" number portability database

Horrocks Technology wrote the specifications for the porting system and proposed a manual process for each porting based on an Excel file to be exchanged between the operators with four parts for the four messages (Authorisation Request, Authorisation Response, Instruction Request and Instruction Response) with the two operators completing the parts in succession.

In the subsequent discussions the operators wanted some independent measure of the statistics and asked Horrocks Technology to look into the use of an internet based "ticketing system" to log all the messages in the porting process. Horrocks Technology looked at several ticketing systems but found that they were designed primarily for helpdesks and could not provide easily the functionality needed for a bilateral process. Horrocks Technology, however, found the RunMyProcess (RMP) platform[1] for hosting customised processes on the Internet. This is a general purpose "cloud based" process hosting platform developed initially by three French entrepreneurs and acquired by Fujitsu in 2013.

Horrocks Technology with two days paid support from Jeremy Rochot of Revevol, a French cloud software specialist, developed a prototype sufficient to show how RunMyProcess could support the porting process, and after a demonstration in early December 2013 the operators endorsed this solution.

RAB then funded the development of the operational solution based on RMP. This development took place in January and February and during this period the operators added several requests for additional functionality. The development process was highly interactive and different from the normal formal contractual approach because of the high level of trust between the parties. As a result the development costs were remarkably low because the premiums for risk were eliminated from the arrangements. It is worth recording how this was done.

Horrocks Technology using the "system level" knowledge it had acquired of RMP, wrote an initial specification for the process system in terms of how RMP would implement it. This meant that Revevol was given the requirement in "its own language" and scope for misunderstanding the requirement was minimised. Thus Revevol could skip the normal initial task of transposing the customer requirement into its own "system language".

RAB funded both Horrocks Technology and Revevol on a per-day basis and so RAB paid only for the work actually done and avoided both the potentially high premium for risk in a fixed price contract and the delays involved in the inevitable updating of specifications under a fixed price contract. The development was carried out by only two people: Jeremy Rochot of Revevol and John Horrocks of Horrocks Technology, thus the problems of communicating in a larger team were eliminated.

---

[1] See www.runmyprocess.com

John and Jeremy worked very closely together using shared documents on Google Docs and frequent discussions via Skype and Google using shared screens, which proved invaluable. No physical meetings were needed.

A trial system was provided to the operators and this led to various requests for additional functions to meet the specific needs of the operators. These additions were normally implemented within a few days.

Inevitably as the development progressed, changes were made by mutual agreement but because only two people were involved agreement could be reached, the specification updated and the programming changes made very quickly.

The development grew quickly into the equivalent of a full number portability database running on the Internet. The following lists the main features:

- Each operator can designate one or more users who are categorised as "Sales", who can only initiate porting requests, eg from their shops, and "Managers" who can respond to and authorise porting requests from other operators.

- Operators can choose to use personal emails for their users or can set up a generic email address such as "porting@operator".

- Users access the system through an Internet page, using their email address and password. They send and respond to porting process messages by completing forms on screen.

- Each porting involves a four part form, one part per message and although the user is displayed the part to be completed next, they can open the whole form to see the history of the porting.

- The identity of the user who completes each stage of a porting is logged.

- Additional operators and users can be added easily.

- Since not all operators are porting between each other, permitted directions of porting are specified and used to check each request.

- When an operator sends a message to another operator, all the Manager users of the receiving operator are informed automatically by email and can access the system via a link in the email. Individual Manager users can opt out of receiving emails.

- Manager users can see the details and progress of all portings into and out of their network, and can download a list of all ported numbers and the operators who are currently serving them.

- The system pushes the results of each successful porting using FTP to NetNumber who run a copy of the list of ported numbers for the Syniverse SMS Hub, which handles most of the international SMSs sent into Bermuda. This enables the hub to route the incoming SMS correctly.

- The system pushes the results of each successful porting using FTP to a public website (www.lnpberbuda.org) where the public can check which operator serves which number and so determine what on-net discounts may apply.

- The system compiles data on all portings which can be downloaded by RAB to calculate the porting statistics.

Costs

The total development effort for the RMP system has been approximately 20 days for Horrocks Technology and 40 days for Revevol. This demonstrates the potential of the RunMyProcess platform to provide complex process solutions at very low cost. The development of a traditional portability database could cost well over $200,000.

Unlike most of the commercial number portability databases, this solution is free of software licence fees and so its running costs are just the underlying costs of using RMP, which is less than $1500 per year plus any on-going support from Horrocks Technology and Revevol on a time needed basis.

Experience of the first five months of operation

Mobile number portability in Bermuda started on schedule on 3 March. For the first two or three weeks the mobile operators only submitted relatively few requests but once confidence grew that the systems were all working correctly they started to use it as a normal part of business.

There were several minor issues with the RMP system in the initial month but since then it has worked without problems.

The new entrant fixed operators requested portability from BTC and fixed portability started in April. CellOne, the mobile operator also requested portability from BTC making Bermuda one of the few countries with portability between fixed and mobile.

There have been no complaints from the operators about the portability system, although Digicel did press hard in January/February for a postponement of the launch of mobile portability but in practice met the launch date on 3 March.

Comments from the Bermuda Regulator

"The principle of Number Portability was enshrined in the Regulatory Authority Act and all the operators were concerned that no robust, cost- effective NP system could ever be implemented in Bermuda. Thanks to the approach of our consultant John Horrocks and the numerous workshops held on the subject with the operators NP in Bermuda became a reality.

The operators wanted an automated process "ticketing system" that could be affordable and sustainable. Run My Process was the perfect solution and was relatively easy to implement. It was implemented on time and once implemented worked extremely well giving visibility to the RA of what was going on Number Portability. The operators also received this "cloud based" process hosting platform very well. Training for the staff of the operators was a couple of hours and all immediately became proficient in its use in record time."

Philip Micallef, CEO, RAB

Future Potential

There are many inter-operator processes in telecommunications beside number portability:

- local loop unbundling
- carrier pre-selection
- wholesale service ordering
- duct and fibre ordering

All these services need regulatory supervision at least where those operators with significant market power are concerned and would benefit from an independent process that is open to the regulator.

The development of the number portability process in Bermuda has shown the potential for the RunMyProcess cloud technology process platform to provide an exceptionally cost effective customised solution.

The potential of RunMyProcess is not restricted to telecommunications but applies also for many other industries.

Enquiries

John Horrocks and Jeremy Rochot are keen to develop RunMyProcess based solutions for other countries and applications. Enquiries should be directed to:

John Horrocks
Horrocks Technology Limited
+44 1483 797807
john@horrocks.co.uk

July 2014