



**Business  
Services**

**CONSULTATION ON IMPLEMENTATION OF IP-BASED INTERCONNECTION  
IN SINGAPORE  
SUBMISSION TO  
INFOCOMM MEDIA DEVELOPMENT AUTHORITY**



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Date: May 24, 2021

**Ms Aileen Chia**

Director-General (Telecoms & Post),

By email :

([consultation@imda.gov.sg](mailto:consultation@imda.gov.sg))

Deputy Chief Executive (Connectivity Development & Regulation)

Infocomm Media Development Authority

10 Pasir Panjang Road

#03-01 Mapletree Business City

Singapore 117438

**Subject: Response to Consultation on Implementation of IP based Interconnection in Singapore.**

Dear Aileen,

Orange Business Services has been providing advanced IP voice and data communication services to multi-national corporations in Asia, Europe, America and MEA region with an aim to help our customers to go through the digital transformation journey. We are glad to have the opportunity to share with IMDA our view and experience to implement TDM to IP-based interconnection regime in multiple countries globally. We have started the implementation of our first TDM to IP migration since 2013 and is now operating IP-based voice network in 31 countries. We wish such experience sharing could help IMDA and Singapore to address the future technological changes and demand for advanced communication in new digital IP regime.

We fully agreed with IMDA's view that IP-based interconnection will bring higher operational efficiency for voice traffic and improved voice quality. Furthermore, our experience of TDM to IP interconnection showed that such implementation will reduce the long-term operating cost as a whole and shorten the speed to implement/provision future advanced voice services to our customers. The success of migration to IP interconnection will be dependent on a robust, open, transparent policy framework for all stakeholders to follow together with regulator's oversight. We welcome IMDA's consultative approach to address the Singapore's migration into IP interconnection regime with thorough consideration on various key issues like the IP interconnect technical standard, RIO for IP interconnection. We are glad that IMDA did mentioned about the potential implication of Fixed Number Portability model



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under such IP interconnection regime. We agree IMDA view that the industry need to review and consider the appropriate Fixed Number Portability model under such IP-interconnection regime as this will have significant implication towards the long-term cost reduction and efficiency of IP interconnection objectives.

Please find below our response to IMDA consultation and we would be glad to share more information with IMDA re our experience of TDM migration to IP network in Europe, US and APAC region.

Your sincerely,

A handwritten signature in black ink, appearing to be "Patrick Chu".

**Patrick CHU**  
Regional Compliance & Regulatory Counsel  
Orange Business Services Singapore



## **SUMMARY OF MAJOR POINTS :**

1. OBS supports IMDA's view to establish policy and corresponding migration approach for the industry to implement migration to IP interconnect regime within proposed time frame to allow more competition and reduce the long-term cost.
2. We support IMDA view to adopt standardized technical set of IP interconnect. Our IP migration experience in 31 countries in 2013 showed that the IP interconnect technical standard and technology is mature and there is no degradation of service quality to our customers.
3. The offerings of RIO and FNP numbering portability for IP interconnect regime will have significant impacts towards success of IP interconnect migration. IMDA should have regulatory oversights on the development of these two policies to ensure open, transparent, and future-proof model.
4. We support IMDA's view to review the current FNP model under the new IP interconnect regime as it will have significant impacts towards the ultimate objective of IP interconnect.
5. We recommend IMDA to consider the implementation of "**ACQ**" number portability model together with the **Central and Neutral database** as it has been widely implemented successfully in EU, US and APAC region over the last decade and achieved the objectives of long terms network cost reduction and enable more market entrants.



***Question 1 : IMDA invites views and comments on whether operators should follow a standardized set of technical requirements to implement IP-based interconnection at domestic POIs across all operators' networks that are interconnected to provision voice services.***

Response :

We agreed IMDA's view that a standardized set of technical requirements to implement IP-based interconnection. The migration of IP-based interconnection has been in advanced status in many other countries especially in Europe and we expect the standard in Singapore should be defined soonest to enable all operators to prepare accordingly. Our experience also showed that the "standards" are not fully exhaustive, so the details are still to be agreed between the interconnecting carriers. We do have our own set of recommendations to be exchanged with the interconnecting carriers.

***Question 2 : IMDA invites views and comments on whether the Proposed SIP, based on IETF and 3GPP specifications, is appropriate and suitable to be implemented at the POIs.***

Response :

We agreed and support IMDA's proposed SIP model, based on IETF and 3GPP specification to be implemented at the POIs.



**Question 3 : IMDA invites views and comments on the proposed approach to finalise the offerings of the RIO services related to IP-based interconnection, before commencing the migration to IP-based interconnection**

Response :

We are of the view that the offerings of RIO services related to IP-based interconnection, will be one of top crucial items that will have significant impacts towards the those expected objectives of long term cost saving and efficiency of advanced voice services under IP regime. We welcome IMDA's suggestion to have further consultation re the offerings of RIO. We wish IMDA to facilitate the industry to have an open, fair and transparent discussion to review before the finalization of the offerings of RIO services in order to ensure such ultimate RIO offerings will be able to address concerns from both current and future market participants. We would also highlight that the interconnections between other carriers (not the one who offer RIO) should have the freedom of reciprocal technical negotiation.

**Question 4 : IMDA invites views and comments on the feasibility of IMDA's proposals to revise the technical implementation of FNP service in an IP-based interconnection environment.**

Response :

We fully support IMDA's view that the migration to IP-based interconnection will require changes to the technical solutions currently implemented for the FNP services.

The current technical FNP model was based on SS7 with certain specific signaling and was developed when there were only two providers more than almost two decades ago and do have significant cost constraints and limitations for growth.

OBS is in the process of decommissioning our TDM-based network components globally by the end of 2021. In Singapore, we will migrate voice traffic to a retail interconnect model (SIP Class 5) in the absence of RIO SIP offers or wholesale SIP Class 4 offer. It took many years for us to negotiate an improved FNP commercial model in Singapore but the technical restrictions in FNP under SS7 were not conducive to us entering the market.



In light of the growing number of voice service providers in Singapore for more advanced services and competition, we are of the view that the FNP model should migrate to a **Centralized and Neutral Number Portability database model** to reduce the NP cost and efficiency which can lead to foster competition and ultimate benefits to customers. The current FNP technical model does require any-to-any (Mesh) physical interconnection and is not cost effective and not sustainable for more new entrants into Singapore market. The central and neutral database model will enable each service provider to have just ONE interconnect with the central database instead of the current any-to-any (MESH) interconnection with ALL service providers; thus it cope with future growth of service providers and reduce the interconnection cost for those small new entrants.

The new FNP model technical and commercial model in the new IP-based interconnection environment should be open, transparent to the public to enable all new entrants to access.

We would propose IMDA and the industry to consider the adoption of All-Call-Query (“ACQ”) method to replace the current Query-on-Release (“QOR”) method. The QoR method is related to TDM/ SS7 technology and by itself is not technically optimal in terms of query lead-time compared with ACQ.

We strongly suggest IMDA to consider the **ACQ method together with the Central and Neutral database model** which has been implemented successfully in many European countries like Belgium, Austria, Switzerland, Denmark, Spain, Germany, Finland, France, Ireland, Luxemburg, Netherlands, Norway, Portugal and Sweden together with Australia, New Zealand and US. For UK, it is already in the ACQ method with consortium and will migrate into the model of ACQ with consortium and central database in 2023. Such industry-wide implementation of **ACQ and central database** in EU, US and APAC will surely able to provide valuable information and experience sharing for IMDA consideration.



***Question 5: IMDA invites views and comments on IMDA's preliminary views on network security and QoS under an IP-based interconnection environment.***

Response :

With our experience to implement IP interconnection in EU, US and APAC, we do not foresee particular QoS issue bear in mind that most of our customers are those multi-national corporate who do expect higher voice service quality than the general public.

At the beginning, the industry IP interconnection implementation was based on physical interconnect but there are now SIP interconnections based on public interconnect rather than physical interconnect and there do not have QoS degradation issues.

***Question 6 : IMDA invites views and comments on IMDA's preliminary views on the broad migration approach***

Response :

We generally support IMDA's preliminary views on the broad migration approach and do agree that the direction after this consultation and the upcoming RIO consultation will have impacts towards the two migration approaches (a) and (b) mentioned.

Having said that, we would prefer to adopt migration approach (b) which could be able to address various operators' readiness to migrate into the IP interconnect regime in phased approach.

**END**