



PORTFOLIO: VOICE

RETAIL TELECOMS SUCCESS WITH WHOLESALE INNOVATION

DYNAMICS OF THE 2-SIDED TELCO MODEL

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EXECUTIVE SUMMARY

Communications service providers face an array of significant challenges, including significant changes in their revenue mix, with a continuing shift from voice to data, increasing focus on mobility and revenue erosion from so-called OTT services. At the same time communications service providers are faced with increasing complexity, intensifying competition and a capital squeeze. In this market wholesale carriers have tended to be regarded as simply providers of necessary interconnectivity for retail communications service providers. The premise of this paper is that retail communications service providers could develop profitable new revenue opportunities, through considering the commercial relationships they have with their wholesale providers. Wholesale and retail communications providers can work more proactively and co-operatively together, to help retail communications service providers launch new services, develop new revenue streams and compete effectively in both communications and commerce, with next generation IP based communications service providers.

INTRODUCTION

While the overall value of the wholesale communications market might only represent less than 10% of the value of the retail communications market, according to industry analyst Ovum¹, nevertheless wholesale acts as an important foundation for retail commercial success.

The convention of the telecoms industry has been that for every off-net retail telecom transaction, there is some form of interconnect or other more complex series of wholesale transactions. For the network effect associated with the communications network to operate at all there is a requirement for a complex global network infrastructure, managed in the wholesale domain. This convention is breaking down, with the advent of IP based next generation services. Carrier services businesses in most telecoms companies now compete against their own equivalent enterprise business units to directly service large enterprise customers, nevertheless the requirements to manage off-net and international communications continue as before. International wholesale carriers place strong emphasis on developing direct enterprise business, particularly with the types of multi-national enterprise customers that have a requirement for multi-country or multi-region voice and data communications services. Despite the many challenges in the wholesale communications market, nevertheless carrier-carriers and wholesale telecoms providers continue to play an important role in the success of retail communications services.

Commercial models are evolving fast and bi-lateral agreements are increasingly giving way to more nuanced partnership approaches. While wholesale and retail telecoms companies continue to compete, they are also co-operating and interacting in a more complex co-operation type of relationship. A once relatively simple, reciprocal and interdependent value chain has become significantly more complex, as companies buy and sell services and capacity to serve their specific needs on a region by region, or even country by country basis. This trend does not mean the wholesale carrier (or carriers' carrier) model is dead. There will always be a need for global players to build and run global networks, provide capacity and manage international communications, serving the needs of retail communications service providers and multi-national enterprises.

RETAIL VS WHOLESALE

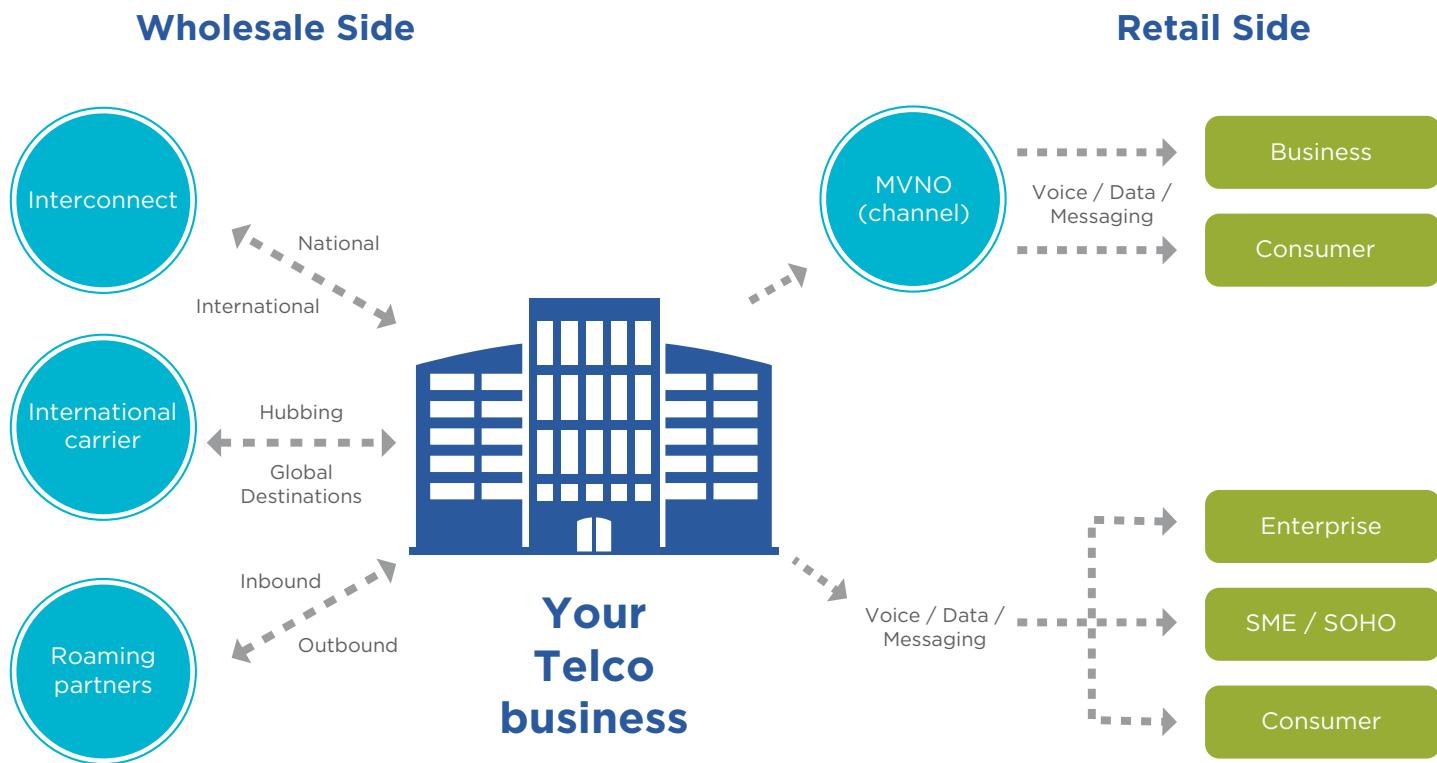
The range of retail transactions that are enabled by wholesale services is significant, in the context of the network effect. These can be grouped into the management of:

- Inter-connection: the physical connection of a carrier's network with equipment or facilities of another network
- Inter-working: providing the technical interface between different types of communication networks
- Inter-operability: functional interworking of telecom services across multi-vendor, multi-carrier inter-connections

Domestic and international interconnect is necessary if an end customer is going to be able to have a conversation with anybody using a different network to the caller. Direct interconnections are managed via wholesale carrier hubbing arrangements, usually governed by a range of conditions, such as volume commitments and bi-lateral agreements. But interconnection in this context may not be enough, as the call might need to be passed across different communications protocols (inter-working) and between different types of communications equipment (inter-operability).

¹Global Wholesale Market Leaders - a long tail of small earners trails a few wholesale giants. David James (pub 4 May 2017)

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Providing wholesale services involves supporting a combination of physical and increasingly virtualised infrastructure, along with the management of a range of processes.

The retail communications service provider customer of a wholesale communications provider would be expected to use a range of services, including access to data centres and co-location facilities in addition to a globally available wholesale network.

With data and increasingly video being the growth engine for telecoms in general, then providing access to data network capacity is also required, whether using carrier Ethernet, IP transit or fibre.

Wholesale carriers are expected to invest in and maintain global backbone infrastructure accessible via regional points of presence (PoPs).

While off-net retail transactions are enabled by a broad range of infrastructure requirements, a specific focus on traditional voice transactions demonstrates the complexity required just to manage a conventional international voice phone call.

- Traffic Termination: management of routes and rates
- Customer / Supplier management: managing multiple interconnect relationships
- Physical Routing: combining cost and quality considerations for optimal routing
- Fraud Protection: monitoring, detection and block of fraudulent traffic attempts
- Traffic Trading: costing, billing, reconciliation, quality monitoring, bi-lateral management, dispute management

VOICE AND DATA WHOLESALE INNOVATION

Wholesale carriers have diversified to offer a range of managed data centre services, co-location space and global internet connections. These capabilities, are being further enhanced with support for cloud, network function virtualisation and software defined networking.

The type of services provided by wholesale carriers will continue to evolve from standard IP transport towards new service enablement, including the concept of communications platform as a service (CPaaS).

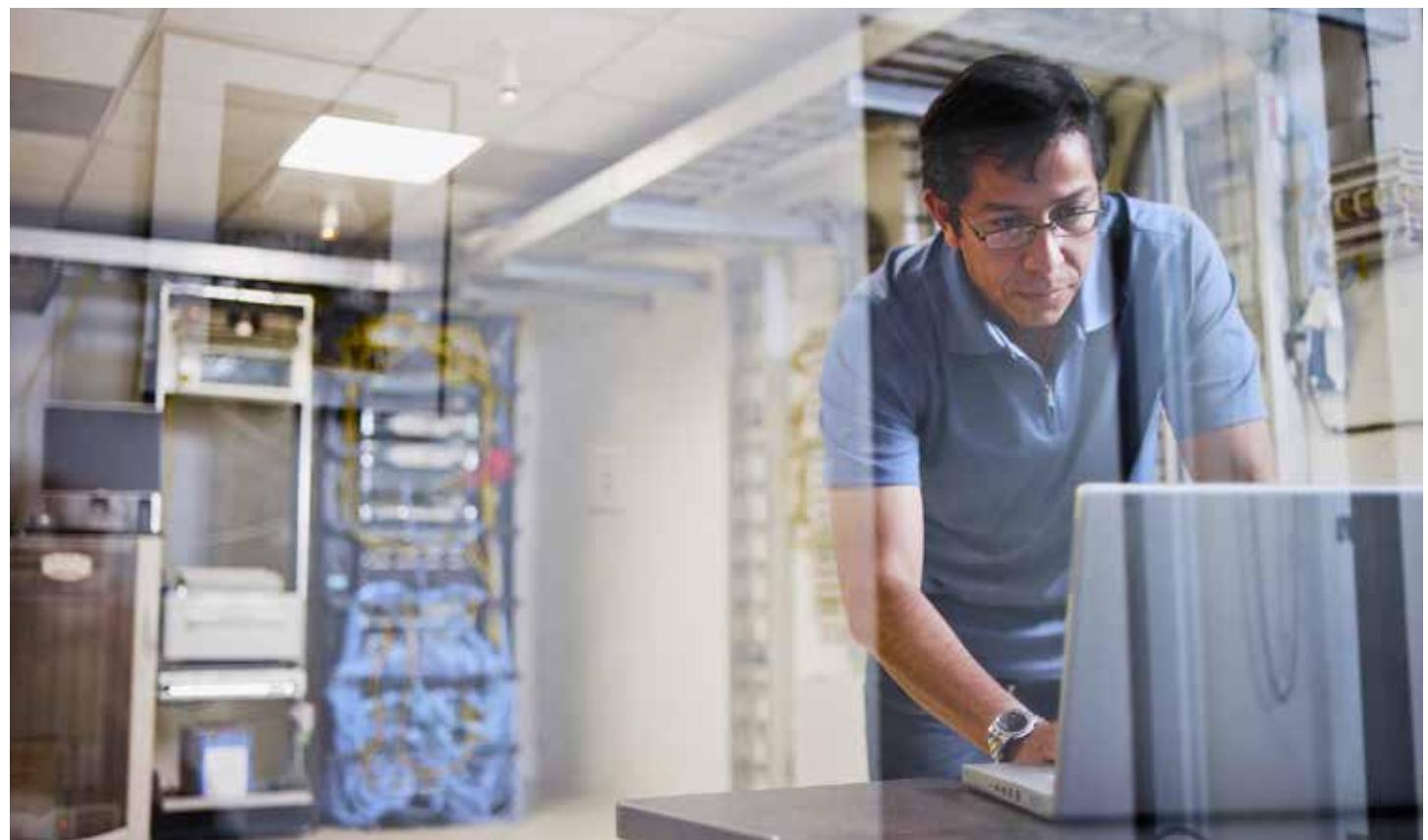
Wholesale carriers have been forced to evolve, in line with the growth in next generation network services and particularly the adoption of VoIP, which in the watershed year 2016 surpassed traditional traffic volumes for the first time.

Wholesale carriers have deployed global, end-to-end core IP networks and are now using new platforms and technologies to develop and deliver services more efficiently and cost effectively.

While much focus is on the delivery of enterprise communications services, there is also a renewed focus in support for retail telecoms, via a range of wholesale enabled capabilities.

A combination of network function virtualisation and cloud based applications means that retail telecoms service providers have a reduced need for CAPEX investment and can negotiate with wholesale carriers for a range of capabilities, including network access, data storage and server capacity, plus services and applications on demand using a CPaaS type service model.

With increasing process automation, wholesalers are becoming more transparent and efficient in the way they can serve their retail and other wholesale or next generation communications customers. There remains the challenge of how to realise revenue growth and profit on the infrastructure investment being made in the wholesale telecoms space, but in a rapidly evolving communications market, new opportunities are becoming apparent on a regular basis. A solution to this can be found in the way that competition in wholesale has evolved. Partnering and co-operation between wholesale providers, network operators, media and content companies and retail telecoms service providers is a far more productive model, than a simple race to the bottom, based on price and capacity. Such an approach enables the delivery of end-to-end services, with streamlined quoting, order management, provisioning and delivery, thus shifting the perception not just about what wholesale carriers can deliver, but how they deliver it.



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NEXT GENERATION ROAMING REVOLUTION

For mobile network operators Inbound and outbound roaming are an integral part of the retail / wholesale mix. Pressures on roaming revenue continue to be affected by subscriber concerns over roaming costs, particularly relating to data roaming.

Roamers might opt to switch off their data connection when they travel abroad, preferring to use alternative data access methods, such as Wi-Fi connectivity for roaming data access, rather than accessing and downloading data via the mobile network. Subscribers want roaming tariff transparency so that they can confidently use data services when roaming, as well as being provided with more control over how they use services, together with control mechanisms to ensure they do not incur excessively large bills.

Earning more revenue from roaming services is desirable, but revenue without margin is of little value. The ability to identify detailed information about roaming usage and use this to develop profitable retail roaming bundles is a key element for successful roaming revenue generation. Attractive tariffs also require the provision of price transparency for roamers, to encourage increased service usage. Using re-pricing techniques, it is possible to achieve both objectives - earning more revenue and improving roaming margins. Re-pricing aggregates wholesale roaming inter operator tariffs (IOTs) and based on steering policies, provides a good indicator of average margin on pricing, while being able to provide accurate and transparent retail tariffs.

What has tended to limit this approach is the constraint imposed by the retail billing system, as price updates can take several weeks to implement in some cases. Re-pricing techniques that bypass the billing system but continue to be integral to the TAP flow help resolve this issue.

In addition to this technique for managing retail roaming pricing, it should also be noted that the relationship between retail and wholesale roaming is also governed by the tri-partite relationship between retail roaming tariffs, wholesale roaming IOTs and wholesale termination rates, requiring close co-ordination between roaming and wholesale departments at mobile network operators and their roaming partners.

Earning more revenue from roaming is also tied to the way data roaming is managed. The advent of 4G/LTE brings new requirements in the management of roaming, requiring IP access and transport. IPX has traditionally been used to solve data roaming challenges associated with packet based data transfer.

However, its uses can go far beyond this. Retail communications service providers should consider IPX as a convergent interconnect platform, providing a way to deliver a variety of IP-based services. An effective IPX strategy needs to factor in more than just an upgrade path from GRX to Diameter signalling and LTE roaming services.

IPX enables a multi-service environment that means communications service providers can migrate from service-specific networks to a multi-service approach. Service providers can capture new business opportunities and reduce the cost and complexity associated with managing specialised, bilateral, and isolated interconnects.

A multi-service approach means delivering consolidated access to roaming, transport and other services, including global VPN and IP transit. The approach should also be able to integrate legacy GRX and managed transport with a path to IPX for seamless service migration between 3G and 4G.

IPX delivers an efficient inter-connection and inter-working for applications, with optimal network utilisation and a simplified interconnect. It integrates Voice Over LTE (VoLTE), HD Voice, Voice Over IPX (VoIPX), signalling and roaming services, as well as video, IoT traffic, mobile messaging and rich-media applications, all within a single communications framework.

IPX interworking and interoperability can enable mobile network operators' retail businesses to compete effectively against next generation service providers, with a range of IP based communications services.

Quite apart from supporting IP based communications services, IPX can also deliver access to other services, including cloud and the possibilities associated with Network Function Virtualisation (NFV). Communications service providers can connect to cloud-based NFV services over MPLS using IPX. This delivers secure access to the cloud ecosystem, along with the responsiveness and performance needed to run applications and services in an NFV environment.

Using IPX in this way enables communications service providers to access the cloud and integrate it with their own network and systems infrastructure with the predictability, security and guaranteed performance associated with IPX.

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A2P MESSAGING VS OTT

We have discussed voice, data and roaming, but wholesale also includes providing inter-working services for mobile messaging. Although A2P SMS traffic termination accounts for a relatively small proportion of overall messaging traffic worldwide, it nevertheless presents mobile network operators with a continuing opportunity for revenue growth, unlike P2P traffic which is in decline.

Industry analyst Mobile Squared is predicting strong growth for A2P messaging from 1.7 trillion messages sent in 2017, up to 2.8 trillion messages by 2022. But mobile messaging traffic is becoming increasingly complex. This means mobile network operators face both the challenge of detecting multiple message types, and ensuring their networks are not subject to high volumes of messaging spam or potentially fraudulent messaging usage.

So-called 'grey routing' – whereby the message originator/sender does not have a commercial agreement or relationship with the receiving operator, so the traffic cannot be charged for – is just one example of the messaging misuse that MNOs face. And it is a phenomenon that costs millions of dollars in lost termination fees. Grey routes not only increase costs and take up network capacity, they also artificially reduce prices to third parties that would otherwise be charged a higher standard rate for A2P traffic termination through a legitimate provider.

The reality is that some A2P aggregators, if using a sponsored Global Title (GT) model, continue to deny MNOs the chance to realise the full market potential of the mobile messaging traffic they are terminating.

However, getting a clear picture of exactly who is sending what type of traffic, and how much of it is being sent, as well as being able to control the number and type of messages, is difficult. Spoofing, spam, grey routing, SIM Boxing and SMS bypass fraud are just some of the practises either resulting in revenue leakage or end customer dissatisfaction.

There's also the issue of trust building between MNOs and A2P message originators, not to mention the challenges of identifying and working with multiple legitimate A2P messaging aggregators to build messaging termination volume. MNOs face a high overhead managing multiple A2P partners and may not always have the required reach to the messaging originator community to be able to exploit A2P SMS revenue potential.

Another concern is that some SMS hub providers send a mix of A2P SMS and P2P SMS without properly differentiating the two.

Until recently, MNOs aiming to manage and monetize A2P messaging traditionally had two main choices. They could:

- Establish their own SMS termination ecosystem, using GSMA AA.19 agreements and SMS firewalls for spam and spoofing protection. However, it requires MNOs to invest in their own platforms and expertise – and does not overcome the trust or reach issues already identified
- Rely on Open Connectivity 3rd party SMS hubs. This model does not cover bilateral SMS agreements where SMS bypass can take place. SMS hubs may not disclose the mix of P2P vs A2P traffic – with some not providing effective firewalling either.

The above alternatives are not wholly satisfactory. A retail/wholesale ecosystem that applies the principles associated with P2P messaging hubs, but for the A2P messaging environment is another example where wholesale aggregation and management techniques enable retail communications success.

This approach ensures SMS termination from messaging originators, including over the top (OTT), enterprises and A2P aggregators, directly to the MNO. And, at the same time it avoids grey routing and multi-hop routing. With the mobile messaging exchange model, the wholesale provider negotiates messaging termination with an MNO and then 'sells' this termination capacity to A2P messaging originators.

The addition of a hosted SMS Firewall safeguards the terminating MNO network, the SMS firewall gives visibility and control over the volume and type of A2P SMS terminating in the network. It can also apply complex filtering rules to prevent spam, faking, spoofing and fraudulent use of messaging as required.

A2P messaging will continue to grow for the next few years and the advent of Rich Communications Services (RCS), provides an extra driver to ensure an efficient and secure retail / wholesale model continues to exist in support of the mobile messaging inter-working process.

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CONCLUSION

The premise of this paper has been that retail communications service providers can develop new revenue opportunities, through considering the commercial relationships they have with their various wholesale providers. Wholesale and retail communications providers can work more proactively and co-operatively together, to help retail communications service providers launch new services, develop new revenue streams and take an active role in margin management.

In the wholesale telecoms market Tata Communications focuses on the transportation of information between multiple globally dispersed locations, managing all the complex inter-connection, inter-operability and inter-working processes, while investing in and maintaining a global wholesale communications infrastructure. From a wholesale to retail perspective, the service enablement that Tata Communications provides for its' retail communications service provider customers can be summarised into four key themes:

Enabling borderless growth – using best-in-class infrastructure to support communications service providers that have an ambition to rapidly develop new revenue streams by launching global services across new markets and into new segments

Improving productivity & efficiency – enabling seamless, multi-platform collaboration, with ubiquitous access to data and applications

Enhancing the end customer experience – helping communications service providers to deliver a seamless omni-channel end customer experience, to increase service awareness and promote loyalty

Managing business risk – providing the stability of a global, fully redundant wholesale communications infrastructure for reliability and near-zero business disruption, while also helping to secure data and applications against external threats



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