

The Death of GRX/IPX

How the Entry of Cloud Providers Disrupts the Telco Market

Discussion Paper

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All major cloud providers are making a strong push towards entering the telco industry.

Current Trends and Developments

Situation

Cloud Leaders Are Building Up Their Telco Services

In recent months, it has become evident that **the largest players in the cloud market have put a special focus on the telco industry**. Through acquisitions and the launch of new services, AWS, Google Cloud and Microsoft Azure are trying to build up telco DNA and find their entry point into the market:

- Recently, **Microsoft announced the acquisitions of Metaswitch Networks and Affirmed Networks**. Both companies offer cloud-native network solutions for MNOs that will now be deployed on Microsoft Azure.
- In March, **Google Cloud** announced a specialized version of its multi-cloud platform Anthos for telco firms. The tech giant also launched the Global Mobile Edge Cloud which **gives its telco partners access to edge computing capabilities**.
- At the end of last year, **AWS and partnering MNOs** announced AWS Wavelength. The goal of the new service is to **embed AWS hardware into the MNOs' infrastructure** to cut latency.

Upcoming Developments

NFV Offers Will Be The Cloud Providers' Entry Point

Microsoft's acquisitions of Metaswitch Networks and Affirmed Networks suggest that **Microsoft Azure will soon enter the telco industry** by offering its own network functions virtualization (NFV) services to network operators. **AWS and Google Cloud are very likely to follow**.

Currently, operators with **all-cloud mobile networks, like Rakuten, are the absolute exception**. Most operators' **first step** towards cloud-based networks will be the use of NFV services for systems that must communicate with other networks. These **are mainly the following gateways**:

- For IP: GGSN/P-GW, PCRF/PCEF
- For SMS: SMSC
- For VoLTE/IMS: IMS AGW, IBCF

As a next step, we predict that centralized **functions from the telco core will move to the cloud**, i.e. HLR/HSS, SGSN and MME.

If the majority of network operators move their network functions to the cloud, the GRX and IPX are at the risk of becoming expendable.

Advantages of Cloud-Based Interconnectivity

GRX and IPX providers offer interconnectivity, data clearing and financial clearing. Once the major telco players make use of the new cloud services, interconnectivity will likely move to the cloud as it offers several advantages compared to the GRX/IPX:



Lower Level of Complexity

When network operators make use of cloud-based network functions, **interconnectivity via GRX/IPX networks adds an unnecessary layer of complexity.** Signals would first need to move from the cloud to the physical GRX/IPX and then back, creating two additional interfaces and thus potential pitfalls.



Better Scalability

Roaming traffic can have very irregular behavior. Traditionally, you need to scale on the maximum. **In the cloud,** this is much more efficient as **you can scale with demand.**



Higher Cost-Efficiency

Virtual interconnectivity solutions require **the involvement of fewer parties and systems** compared to the traditional GRX/IPX. This **gives cloud-based solutions a cost advantage** that results in lower prices for the users.



The market entry of cloud providers into the telco industry is a threat to the current business model of the GRX/IPX providers.

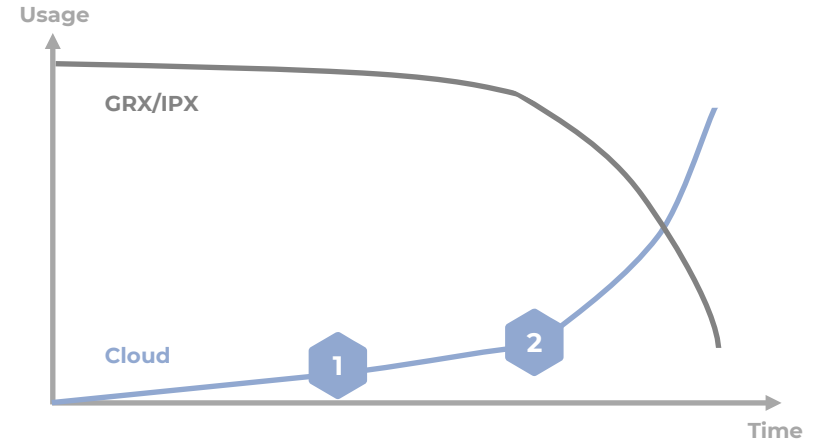
How will the GRX and IPX providers adapt as the transition to cloud-based network systems takes place?

Outlook

Projected Course of Events

- 1** More **network operators will start to move their network functions to the cloud**. The move will allow them to reduce costs and lower their prices. While they will establish interconnections within the cloud, the **usage of the GRX/IPX will hardly be affected**.
- Once the majority of network operators has moved to the cloud, **a tipping point will be reached** as it will become more feasible to establish interconnectivity within the cloud. Consequently, **the GRX/IPX providers will suffer from decreasing revenue** which will drive up their prices. This will accelerate the establishment of interconnectivity within the cloud even further.

Impact on Where Interconnectivity Takes Place



? How will the GRX/IPX providers react? Can they also move their business model to the cloud (e.g. through an AWS app)?

Digital Oxygen has a strong record in telecommunication and specifically connectivity projects, eSIM, and IoT.

Digital Oxygen Telco Expertise

Telco Experts



Axel Meiling

Partner

Experience

- 18 Years in Telco
- 8 Years in Consulting
- Inventor of numerous telco patents



Michel Zwijnenberg

Telco Advisor

Experience

- 20 Years in Mobile Telco
- Founder of one of the first European MVNEs
- Founder of the largest IoT Service Provider in the Netherlands

Connectivity Expertise (Selected Projects)



MVNO From Scratch

- ✓ Full project management from strategy development to implementation
- ✓ Partner sourcing and contract negotiations



Development of a Global eSIM Strategy

- ✓ Extensive market and competitor analysis to derive strategic options for a global eSIM Hub solution
- ✓ Joint development of strategy, implementation roadmap and rollout planning



GGSN/P-GW Vendor Selection

- ✓ Requirements management and design of target architecture
- ✓ RFP process including comprehensive solution analysis and TCO evaluation



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