# IPX Redundancy – The Benefits of Implementing Dual IPX

## The Value of IPX

There are many benefits to implementing an IPX solution. Above all, though, IPX offers a mobile network operator (MNO) the ability to deliver a full range of services while supporting legacy and next-generation networks with unparalleled quality-of-service (QoS) – all through a single connection. As the value of IPX increases with these benefits as well as the continued deployment of LTE networks, MNOs have become progressively more dependent on these services. As a result, it is imperative that MNOs consider the benefits of implementing an alternate IPX solution to maintain superior roaming services.

## Delivering High-Quality, High-Availability Roaming Services

One of the defining features of an IPX network is the expanded capabilities that allow for superior levels of service through the integration of technologies that offer differentiated QoS and class-of-service (CoS) offerings. These enhanced levels of service were developed to offer mobile users an elevated level of mobile service with high bandwidth rates, strong security levels, and an uptime comparable to that of fixed networks.

Maintaining this level of service and availability has been the objective for MNOs seeking to grow their subscriber base while minimizing subscriber churn and general customer dissatisfaction. As a result, the introduction of a secondary IPX network either running in parallel or as a backup solution has become more critical for MNOs looking to grow their global roaming network while maintaining service levels and network redundancy.

## Advantages of Dual IPX Networks

The advantages of implementing a dual IPX strategy are numerous. The ability to maintain superior customer care and experience can always be considered paramount, but there are several benefits a redundant IPX can offer that directly affect an MNO's ability to maintain high levels of service. These include increased reach and coverage with improved reliability through peering arrangements, high availability, and stronger competitive advantage.

### *Greater Reach and Coverage*

One critical best practice is to avoid single network dependencies by implementing geographically diverse network access to different network backbones. This is also supported by the growth and adoption of mobile devices, and it has created demand for mobile services with global reach. Diverse network connections also help an MNO avoid sole dependency on a single IPX network that is being engineered and managed by an external vendor.

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Complementary coverage from two IPX providers expands an MNO's reach to more global locations, offering subscribers an enhanced roaming experience by broadening the number of supported roaming destinations.

IPX providers connect at public peering points throughout the world and with each other in private arrangements. The ability for each IPX network provider to establish direct connections to each and every global MNO is a difficult proposition based on available operational and budgetary resources. Peering between IPX networks, whether it be through established Internet exchange points or through private peering, is a critical element of establishing a wide network of connections. However, as a result of the inherent lack of end-to-end QoS at interexchange points, using a second IPX network, and thereby gaining a secondary peering point, is an ideal way to ensure better uptime globally.
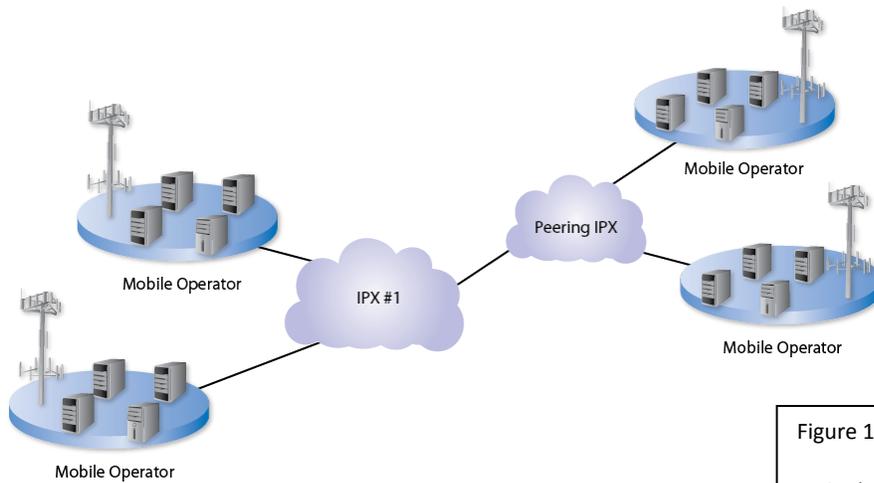


Mobile Operator

Peering IPX

Mobile Operator

IPX #1

Mobile Operator

Mobile Operator

Figure 1.

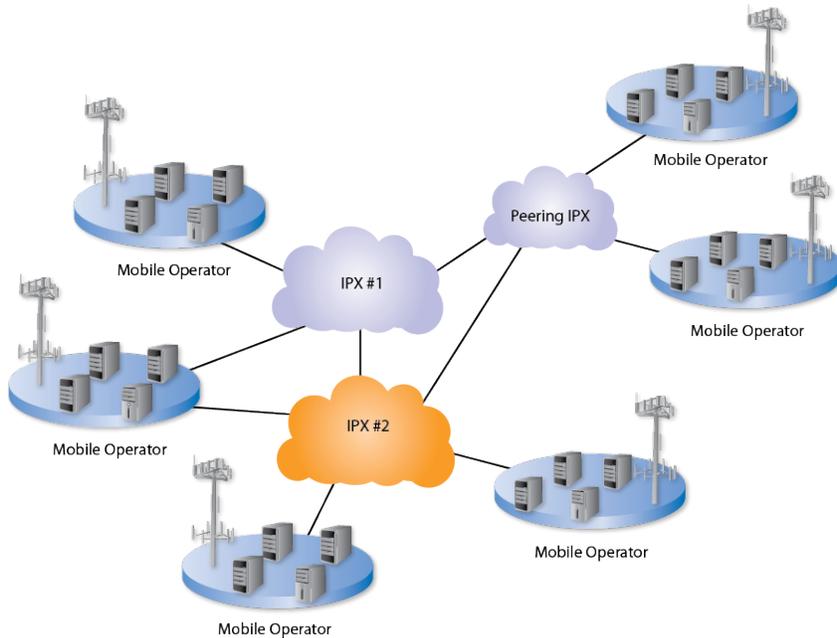*A single IPX implementation has limited connections and peering relationships.*

Figure 2.

*A dual IPX implementation opens up additional network connections through new peering relationships in addition to introducing additional redundancy.*

*High Availability*

Being able to maintain five-nines network availability has challenged the mobile industry for years. The concept of keeping a network available for 99.999 percent of the time has always been tied to operational performance directly and ultimately affecting the user. Service-level agreements designed to ensure that specific levels of service that are guaranteed and mutually agreed upon by the customer or partner and built into a contract establishing a defined measurement of service or performance have been implemented to uphold near-zero failure rates. The implications of this are that not maintaining agreed-upon service levels can lead to falling short of performance benchmarks accompanied by penalties or fines.

The critical aspects of downtime resulting from a network outage can be detrimental to subscriber satisfaction, increasing user complaints and ultimately driving up customer churn as they seek alternative providers. But even with evolution of network equipment designed with the latest in technology and with minimal failure rates, there is still a general understanding that no network is 100 percent reliable or immune to unexpected downtime. Therefore, it has become more critical to implement a backup option – a second IPX – to either redirect traffic through, or if sharing network traffic already, then as the main connection. A dual network minimizes the threat of an unexpected disaster scenario based on possible failure of any single external network element.
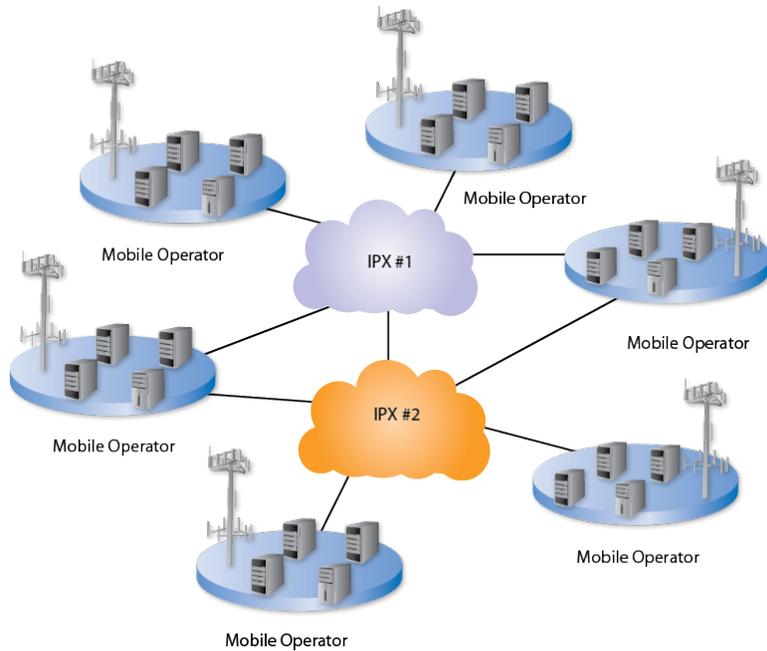
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*Constructive and Comparative Competition*

With the introduction of dual IPX vendors, an MNO is not beholden to any one IPX vendor and can develop comparative insights into service offerings of each vendor, including support, features and pricing. It is in the best interest of the MNO to maintain a healthy competition between IPX network providers to establish optimal services and promote further innovation of mobile interconnectivity services.

**The Syniverse Advantage**

With over 200 IPX customers worldwide, both through direct connections and through extensive peering arrangements, Syniverse supports the world's largest multiservice IPX network. By pairing the Syniverse IPX with their existing IPX solutions, MNOs can immediately realize increased reach and improved subscriber satisfaction by providing seamless connectivity and support for multiple services through a single connection.

One of the core competencies of Syniverse is our strong expertise in managing global IP networks and IP QoS provisioning, and GRX and IPX roaming.  This expertise gives us the flexibility to support most MNOs' routing requirements.

Redundant connections to the public peering points of the world's largest Internet exchanges located strategically throughout the world, help to ensure multiple peering connections with the addition of scalability. Syniverse now has the largest peering network with the greatest global reach of any IPX network.

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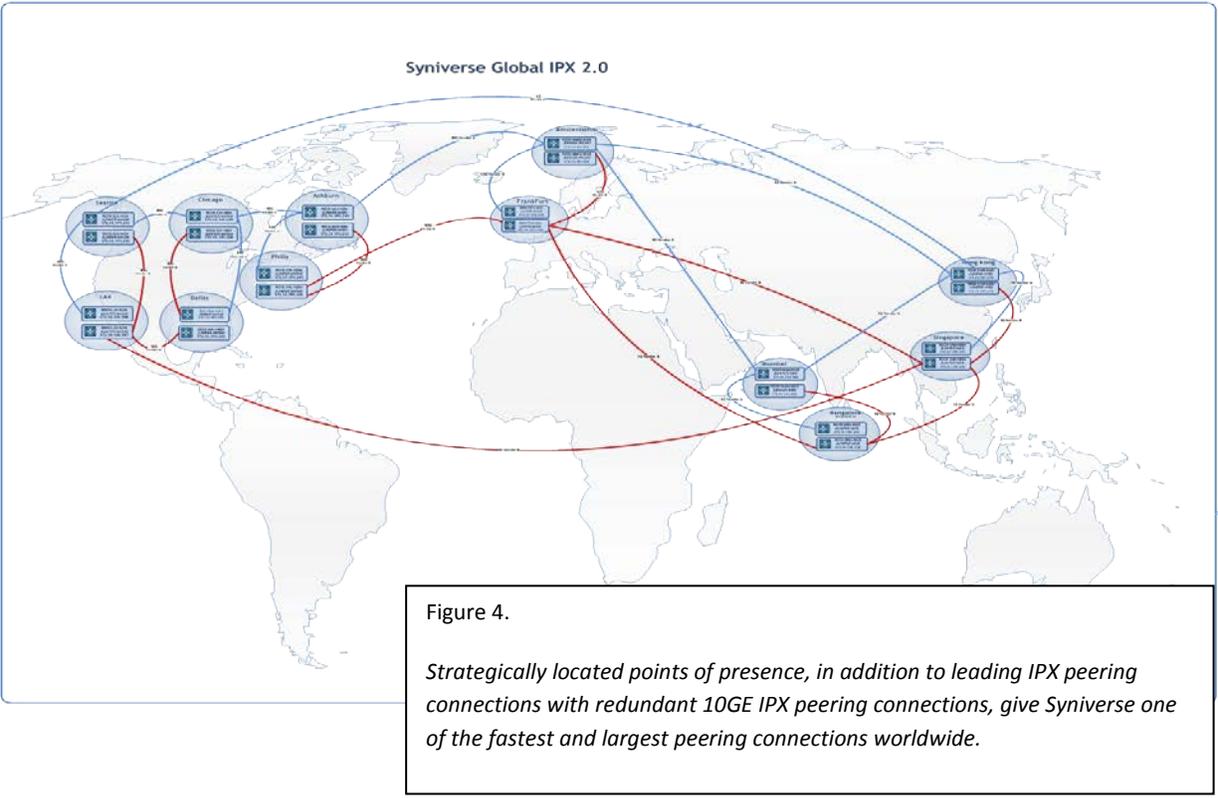
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Syniverse Global IPX 2.0

Figure 4.

*Strategically located points of presence, in addition to leading IPX peering connections with redundant 10GE IPX peering connections, give Syniverse one of the fastest and largest peering connections worldwide.*

**Summary**

MNOs need to manage a wide range of services and technologies, as the mobile environment continually evolves to the next generation of service and solutions. In addition, mobile users expect an ever-increasing level of service requirements, including the ability to access their devices and their data applications, anywhere, anytime, with optimal network connectivity and minimal network downtime.

It has therefore become more critical, and in some cases common practice, for MNOs to utilize two separate IPX providers to reach an ever-expanding global operator network with improved QoS with solid and proven reliability. This has been the case for most Tier 1 MNOs having implemented more than one GRX roaming services, and it will be the case for MNOs implementing an IPX network solution.

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