TATA COMMUNICATIONS

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PORTFOLIO : SERVICE

# MULTI-SERVICE IPX

## NEW DEPLOYMENTS, NEW APPLICATIONS, NEW SERVICES

JUNE 2022

**IPX has now been part of the mainstream of networking solutions for many years. Although the benefits of IPX are becoming more widely understood, the many ways it can be used are still being discovered.**

IPX delivers consistent quality, efficient service scalability, security and the ability to simplify the delivery of complex applications for communications service providers. That makes it a powerful networking solution for any provider of IP based communications. These benefits also mean IPX can play a part in Machine-to-Machine communications, the Internet of Things (IoT) and Cloud access, while also helping to provide valuable information and insight into service usage and user behaviour.

IPX is so much more than just an enabler of data roaming services. It can help communications service providers (CSPs) bring innovative solutions to the market, as well as delivering efficient, high-performance networking.

## MORE THAN JUST DATA ROAMING

IPX has traditionally been used to solve data roaming challenges associated with packet-based data transfer. However, its uses can go far beyond this. When you look at your IPX strategy, you should consider an IPX fully converged interconnect platform as a solution with which to deliver a variety of IP-based communication services. An effective IPX strategy needs to factor in more than just an upgrade path from GRX to Diameter signalling and LTE/5G roaming services.

IPX enables a multi-service environment that means as a CSP, you can migrate from service-specific networks to a multi-service approach. That's truly liberating, as it means you can capture new business opportunities while also bringing down the cost and complexity associated with managing specialised, bilateral, and isolated interconnects.

A multi-service approach delivers consolidated access to roaming, transport and other services, including global VPN and IP transit. The approach should also be capable of integrating legacy GRX and managed transport together. This offers a path to IPX for seamless service migration between 3G and 4G, while having the option to run 3G and 4G services in parallel.

IPX is all about efficient inter-connection and inter-working for your applications, with optimal network utilisation and a simplified interconnect. It helps integrate a range of communications services and capabilities, including Voice Over LTE (VoLTE), HD Voice, Voice Over IPX (VoIPX), signalling and roaming services, as well as video, IoT, messaging and rich-media applications – all within a single communications framework.

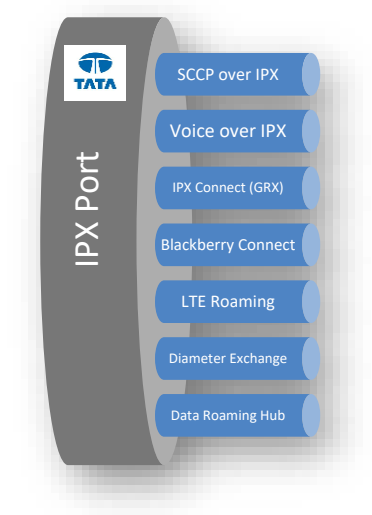


**Figure 1 – IPX infrastructure supporting multiple services.**

## IPX REDUNDANCY AND A DUAL IPX STRATEGY

IPX offers the ability to both deliver and be used to help monitor superior levels of service, above and beyond what the public Internet can provide. Enhanced Quality of Service (QoS) and Class of Service (CoS) management enables a higher Quality of Experience (QoE) for users, with high bandwidth rates, strong security, and high availability rates.

These benefits make it an ideal solution for delivering high performance and redundant networks. Optimum QoS and QoE enhances customer satisfaction and reduces churn. With a dual IPX strategy, you can guarantee that your customers have the best possible experience and performance with back-up that is equally capable.

A dual IPX strategy can deliver some compelling benefits:

• **High Availability:** Even with new network equipment, designed with the latest technology and with minimal failure rates, no network is 100% reliable or immune to unexpected downtime. As more services rely on IPX, high performance back-up options become critical. If you rely on IPX, you should look at redundant options for either re-directing traffic or sharing network traffic with a primary connection. A dual IPX approach minimises the threat of an unexpected failure of any single external network element.

• **Expanding Reach and Coverage:** In any communications network, the accepted best practice is to avoid single network dependencies by instituting geographically diverse network access to multiple network backbones. As services become increasingly global and diverse (Voice, Roaming, Internet access, IoT), global reach becomes equally important. The diversity of services across an IP network means that you should avoid sole dependency on a single IPX provider around the world. Complementary coverage from two IPX providers can expand service options as well as global reach.

• **Secondary Peering:** Peering between IPX providers, whether through established Internet exchange points or through private peering, plays a critical and efficient part in establishing a wide network of connections. It can however result in an inherent loss of control over end-to-end QoS at inter-exchange points. Using a second IPX and gaining a secondary peering point is an ideal way to ensure better global availability.

• **Increased Choice:** A dual IPX approach means that you are no longer dependent on one IPX vendor and can develop comparative insights into service offerings of each vendor – including support, features and pricing. This helps maintain a highly competitive dynamic between IPX providers to establish optimal services and promote efficiency and innovation for IP inter-connectivity services.

In an increasingly competitive communications service market, a dual IPX strategy can help to differentiate your services, offering maximum uptime and performance for enterprise applications. IPX redundancy also brings the ability to maintain consistent levels of service, including high availability and increased reach and coverage with improved reliability. This approach helps to combat competitive pressure and maintain service levels and network redundancy, while broadening options to offer new services not just limited to LTE and 5G roaming.

IPX providers themselves can also grow the reach of their IPX global service and avoid the pitfalls of a single source. They can look to other IPX providers to help them add IPX redundancy and guaranteed quality while expanding the scope of their offering.

A dual IPX strategy makes sense for communications service providers and for IPX providers, as it delivers the QoS and QoE that today's market demands.

## NFV AND CLOUD OVER IPX

Just as new market requirements can benefit from using IPX, it can also deliver advantages for new and emerging solutions like cloud access and Network Function Virtualisation (NFV). You can connect to cloud-based NFV services over MPLS or hybrid-WAN 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 lets you access multi-cloud environments and integrate them with your own network and systems infrastructure with the predictability, security and guaranteed performance associated with IPX. NFV is still an emerging technology, and communications service providers are wary of NFV's QoS requirements and potential security issues, in particular 'Denial of Service' attacks and hacking.

The IPX-based approach is a network, function-specific V-LAN deployed on IPX, which can be provisioned over existing IPX interconnect. This approach addresses issues, including:

• **Security**, including hacking and DDoS attacks – as IPX is isolated from the public Internet.

• **QoS on I/O** – because bandwidth is managed and segregated by service and function.

• **Orchestration**, with one V-LAN per function, which can be turned on and managed separately, and even sourced from different vendors.

IPX can provide a secure and consistent environment for the delivery of NFV. It offers the QoS and QoE required to help you adopt NFV without worry about network capacity constraints or security threats.

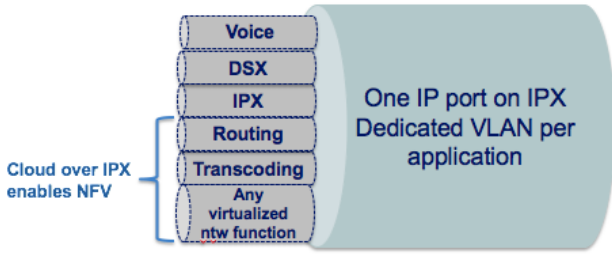


**Figure 2: NFV using IPX cloud access**

## IOT COMMERCIAL MODELS

Much like NFV, IPX can also have a role to play in the success of IoT. IPX can provide the scale, supported by the necessary signalling functionality to make high volume cross-border IoT traffic technically and commercially viable.

IoT is not a single market or segment but multiple markets and multiple segments including Connected Cars, Smart Cities, Connected Devices, Remote Security and Home Automation amongst many others. While individual segments and sub-segments within IoT might vary, the commercial model involves a move from relatively high revenue and low data volume services towards individually lower component revenue services, but with higher data volumes.

IPX can deliver the efficiency and scalability to support these growing data volumes while also offering the QoS required for critical applications. IoT services must be reliable in order to be both useful and credible. From sensors on buildings to connected cars, the network is the foundation for the success of IoT. While some applications may rely on the network in life and death situations, as in autonomous vehicles, others will not. That requires a flexible approach to CoS and high availability.

It is also expected that a considerable volume of IoT-connected devices will be in permanent roaming situations. This might include automotive applications, transportation, or even connected consumer devices.

When a connected device of whatever type is communicating with a management system in another country, reliable connectivity is vital. The ability to deploy and monitor multiple QoS levels makes IPX an ideal connectivity management tool in these situations.

Security is a recurring concern with IoT. In this case, and unlike the public Internet, IPX already provides a secure IP connectivity environment. IPX is separate from the public Internet and can deliver the security that IoT needs.

Like NFV, IoT will need the support of a networking technology that can deliver security, quality and efficiency. That means IPX will be critical to its future success.

## WHERE DO WE GO FROM HERE?

IPX has the potential to support a new wave of applications and services. From building a foundation in quality and availability with a dual IPX strategy, to supporting Cloud, NFV and IoT, IPX can help you grow your businesses. When you consider the possibilities that IPX offers, you will be able to deploy new services and offer customers better experiences. You can compete more effectively in the deployment and management of new services, while reducing churn.

Re-evaluating the role of IPX in a communications service provider's business can indicate a new way forward and enable you to efficiently deliver the services of the future. As you are challenged to deliver services and applications that are increasingly demanding, you will find that IPX can solve pressing issues around QoS, QoE, scalability and security.

IPX is not just invaluable for data roaming. It can have a lasting impact on your business and transform your approach to high performance and secure networking.

## TATA COMMUNICATIONS IPX+

Tata Communications IPX+ framework provides a converged interconnect platform, enabling end-to-end management across mobile networks for the delivery of multiple IP based services.

Communications Service Providers receive consolidated access to roaming and transport options including Global VPN, IP transit and 'IPX Connect' – providing GRX and managed transport with a path to IPX for data roaming, transport, enhanced QoS and security.

Tata Communications IPX+ framework lets you efficiently support IP-based services and applications through a consolidated network, with optimal network utilisation, simplified interconnect and managed service options. Voice, Signalling and Roaming services are integrated within the IPX+ framework, which includes support for LTE/5G Roaming, Voice over LTE (VoLTE), HD voice, VoWiFi, ViLTE, and enablement solutions for real-time rich media applications.

Migrating from service-specific networks to IPX+ connectivity means that you can create new business opportunities and reduce the complexity and costs associated with managing specialised, bilateral, and isolated interconnects.

New services and additional capacity can be added quickly with configuration changes. That means you can scale capacity for individual services to respond to changing user demands.

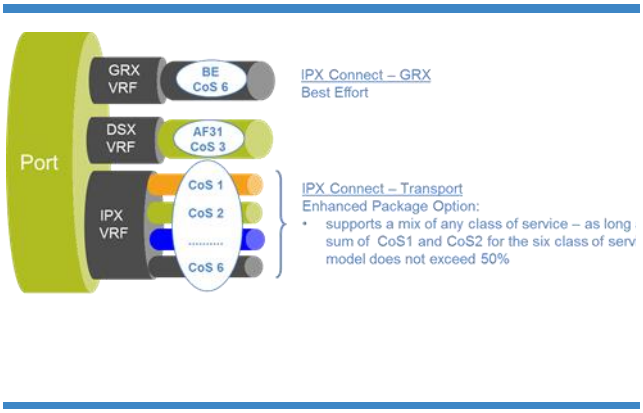


**Figure 3: Tata Communications IPX+, supporting GRX, Diameter Signalling Exchange and multiple CoS types across a single port.**

A range of services, including Voice, Data, Mobility, and Unified Communications can co-exist on the same MPLS port on their respective Logical Port / VRF, and can be implemented on the same customer interface while utilising different OSS/BSS systems.

More information about Tata Communications mobility services are available here: https://www.tatacommunications.com/solutions/mobility-iot/

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## About Tata Communications

Tata Communications is a leading global digital infrastructure provider that powers today's fast growing digital economy.

The company's customers represent 300 of the Fortune 500 whose digital transformation journeys are enabled by its portfolio of integrated, globally managed services that deliver local customer experiences. Through its network, cloud, mobility, Internet of Things (IoT), collaboration and security services, Tata Communications carries around 30% of the world's internet routes and connects businesses to 60% of the world's cloud giants and 4 out of 5 mobile subscribers.

The company's capabilities are underpinned by its global network. It is the world's largest wholly owned subsea fibre backbone and a Tier-1 IP network with connectivity to more than 240 countries and territories.

Tata Communications Limited is listed on the Bombay Stock Exchange and the National Stock Exchange of India and is present in over 200 countries and territories around the world.

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