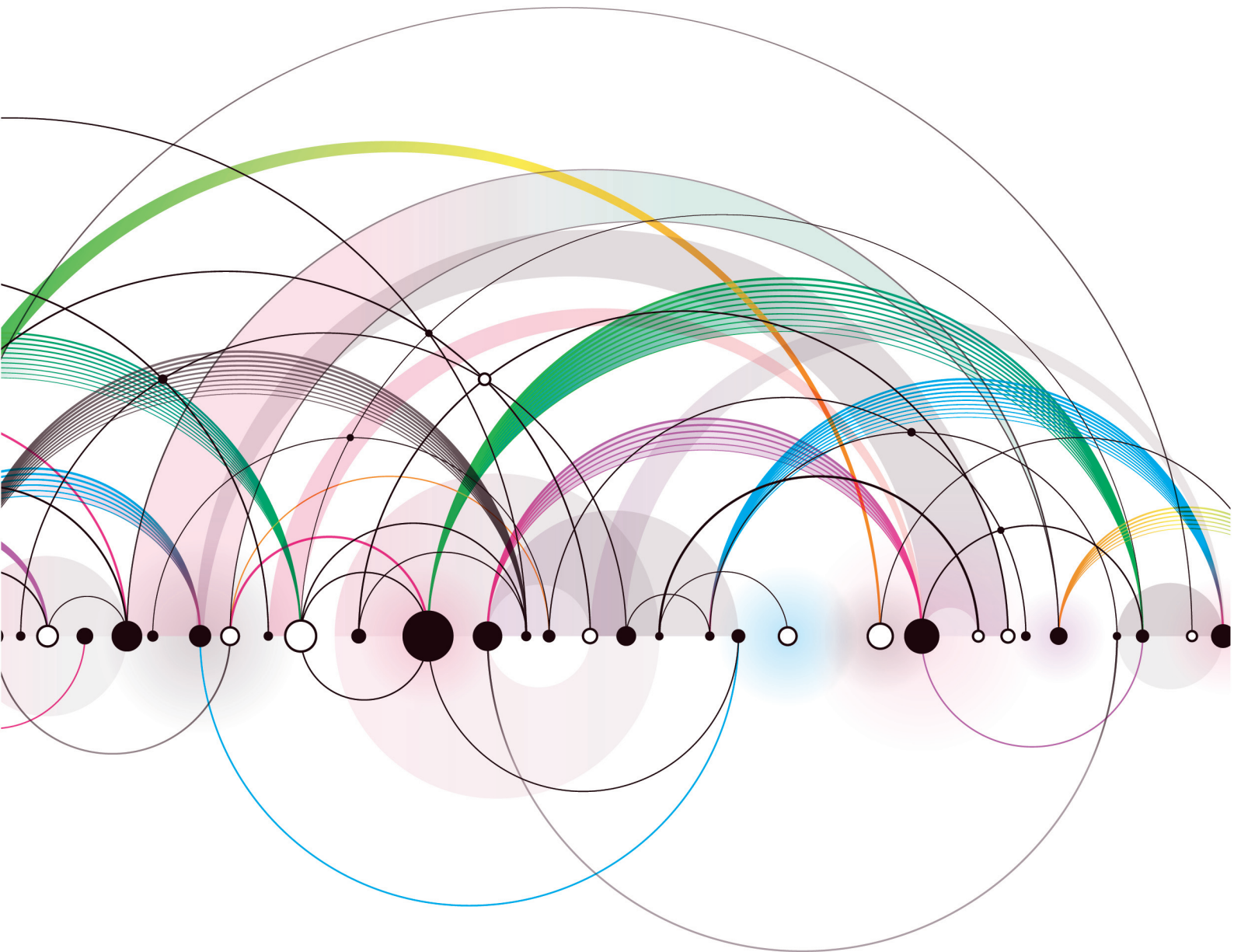


Enabling an All-IP World:

Next Steps for Creating Tomorrow's Intelligent Network



From applications to infrastructure deployments, the journey to an all-IP world is being defined by intelligence in the network.

IP has become the centre of the communications ecosystem and has proven its value as a replacement for TDM. The challenge is for equipment vendors, network operators and service providers of all kinds to navigate this transition and deliver high-value IP applications and services.

IP has been recognised as the future but concrete steps need to be taken to ensure that an all-IP world is possible. This has already been a topic of discussion across the industry for more than 10 years. While the number and complexity of IP applications and services have grown in this time, the industry has still not been able to confidently adopt IP from end-to-end and benefit from a technology that has been discussed for so long. The migration from TDM to IP is happening but at a much slower rate than expected.

What has been lacking is a commitment to address the root issues and concerns that have handcuffed the communications industry so far. When we step back and ask why a complete transition to IP has not taken place already, the answer focuses squarely on the network and what more can be done to ensure service delivery.

As IP services become more complex and demanding, the network must evolve and change. It has to give operators the intelligence, transparency and the confidence to move entirely to IP.

Beyond Best Effort

Today TDM is still the safe choice for operators that need to go beyond “best effort” and deliver premium traffic for customers. This remains the primary stumbling block for IP adoption and the move beyond “best effort” needs to be addressed.

With its origins in the days of the telegraph, TDM has been a safe and secure way to deliver communications services for more than 100 years. In terms of reliability, it sets the bar that IP must reach. TDM can only be replaced by a reliable and secure alternative that satisfies demands for application performance, quality of service (QoS) and quality of experience (QoE).

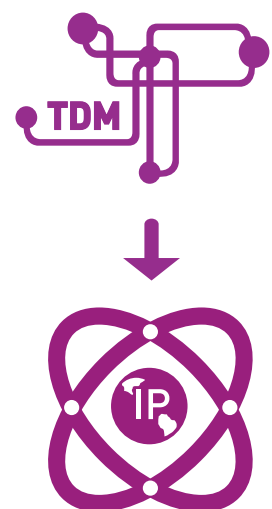
While TDM lacks the flexibility, scalability and the dynamic nature of IP, network operators can trust it to deliver. It is limited but reliable and this fits a voice-centric world where delivering quality voice minutes is what counts. When going beyond voice and looking at demanding IP applications, operators must be prepared to offer a secure environment with guaranteed end-to-end QoS and QoE that surpasses the reliability of TDM without its limitations.

From an operator’s point of view, migrating premium traffic onto an all-IP network still carries risk, as they cannot ensure the quality of their voice, video or application performance for subscribers. Operators have to manage this risk and ensure the delivery of services for their most valued customers.

So far, operators have been able to avoid addressing this challenge by using a mix of TDM and IP but not for much longer.



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Drivers for Change



A Flat Global Network

Multiple islands of network capabilities mean that interworking across the entire communications ecosystem will be complex, inefficient and difficult to manage. Between fixed and mobile networks, IMS and NGNs, there needs to be a homogenisation of the entire networking environment. Each island of interconnection and interworking can be streamlined when all operators are focused on IP.

This will allow more advanced communications services to operate from network to network and break down barriers across types of operators to deliver true convergence on IP. At its most basic an all-IP core network will accelerate the flattening of the global network architecture and simplify the delivery of applications and services.



Mature Technology

The need for a solution is growing. The viability of IP has been proven over the last 10 years. Industry bodies like the GSMA and the i3forum have laid the foundations for the IP tipping point through the creation of frameworks and standards for IP adoption.

The industry is largely in agreement about how to approach IP and this demonstrates the maturity of the technology but the journey is not complete.

IP will be ready to be the primary mechanism for delivering communications services if challenges around QoS can be addressed.



IP Traffic Growth

IP traffic is also increasing. Cisco Systems notes in its Visual Networking Index that global IP traffic has increased more than fourfold in the past 5 years, and will increase threefold over the next 5 years. It believes IP traffic will grow at a CAGR of 23% from 2012 to 2017. That means IP will be more pervasive and operators will be managing more IP traffic on the whole.

It doesn't mean they will have moved to an all-IP world but greater IP traffic means there will be greater efficiency in migrating to an all-IP network environment. They can simplify their network management and the tap benefits of IP while serving new demand for IP.



LTE and 4G

The overall IP pie will grow and widespread LTE and 4G deployments will contribute to this. The Global Mobile Suppliers Association (GSA) expects more than 350 LTE networks to be commercially launched by the end of 2014 with 536 operators investing in LTE in 157 countries.

LTE offers high-capacity mobile data connectivity that will see mobile operators managing increasingly sophisticated IP-enabled devices. LTE and 4G signal the full-scale adoption of mobile data as a primary driver for growth for mobile operators and IP is one of the answers to mobile operator's scalability challenges.

Mobile devices enabled by LTE are consuming data at phenomenal levels and the most cost-efficient way to manage this is with IP networks that are ready to cope with this explosive growth. When the mobile operator is managing large volumes of IP traffic, it becomes inefficient to maintain two sets of network infrastructure. This is one of the ways an all-IP network can have a transformative effect on an operator's business.

The Answer is Intelligence

Intelligence in the network unlocks the potential of an all-IP world. When the network delivers the operator actionable data, it can shape and deliver a service that has a foundation in reliability and performance. Where IP networks have failed in the past is in delivering intelligence back to the operator about the services they are delivering. The lack of transparency and proactive, real-time reporting has limited how far the industry has been able to adopt IP.

The transition to an all-IP world hinges on the ability to deliver:



End-to-End
QoS



Network
Transparency
from Transport
to Application



Real-Time
Data Collection
and Network Tuning

For operators to offer end-to-end quality of service they must have visibility into the network conditions that their traffic will be navigating. When they can see points of failure or places where degradation of service may occur, sessions can be adjusted and steered to maintain SLAs. Intelligence in the networks becomes a means of maintaining SLAs and in turn allows the operator to offer customers guaranteed QoS and charge more for the delivery of IP services.

This changes the scope of IP in an operators business and prepares the operator for the transition to an all-IP world. Visibility into the session, service, network, system, application, traffic type, and media quality allows operators to report back to customers with openness about how traffic is being managed and delivered. Operators have been challenged in this area in the past but must make the adjustments to adopt this more open model.

If they choose not to, then they risk falling behind in terms of delivering application performance for customers. An operator that doesn't have access to this level of transparency will be limited in the application performance they can deliver and the applications their customers can use. This is definitely a change for the operator but one that is worth it. When they have access to a new level of intelligence they can prove the QoS they are delivering and demonstrate where faults have occurred especially when they are not on their own networks but on their partner networks.



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The Limits of Today's IPX

Delivering true end-to-end QoS also means that transparency must go beyond the transport layer to include application performance as well. This is where QoS translates into a high-quality user experience. Today IPX is largely focused on network quality rather than the application layer. Global operators that are able to offer QoS on their MPLS networks are limited in what they can guarantee in terms of application performance.

IPX is a step in the right direction but it does not answer the big questions around delivering QoE for the most demanding IP applications and services. Session quality is what counts in this case rather than the just network QoS. IPX is better than what came before but not comprehensive enough to drive the complete adoption of IP.

The limitations of IPX can be removed when data is captured end-to-end, from the transport layer through to the application. When this data is captured in real-time it changes how an operator can behave. While reporting in a traditional telecoms network has been based on snap shots of network performance, real-time data collection can give the operator key quality indicators as sessions are taking place. This enables them to see and manage impairment factors, see network, application and user behaviours and mine these analytics for actionable insights.

As data and media streams are being delivered operators can be proactive in managing application performance and offer the rest of the business new levels of data. An intelligent IP network opens the door to big data in global telecoms and gives operators new opportunities to innovate around analytics.

Not Killer App, Killer Infrastructure

Intelligent IP networking offers operators complete control over application performance and eliminates the QoS issues that have hampered the move to an all-IP infrastructure. New depths of data and visibility in the network mean that operators can confidently move away from TDM, reduce costs by converging to an all-IP network and maintain a single set of infrastructure. With new intelligence in the network, the complete transition to IP can happen.

Any step forward in the communications industry is followed by the question, "What is the killer app that will push this over the top?" There will be no killer app for intelligent networking from day one. The early adopters will be able to differentiate their service offering and compete on complete QoS and QoE. They will adopt then adapt to new capabilities and offer customers better application performance but it will not stop there. Intelligent networks will be the foundation for a new range of innovation and enable the killer applications of the future. It is killer infrastructure rather than a killer app that is fundamentally important.

An isolated operator can adopt intelligent networking but this killer infrastructure is even more powerful when operators begin to interconnect intelligent networks. When more operators are focused on complete QoS and are interconnected they can mine seamless global intelligence and deliver application performance across networks.

The more operators that are mining real-time data across networks, the scope of IP innovation can grow. A new range of IP applications can be developed and managed because the network will be ready to cope with extreme performance demands. Intelligence in the network will be the catalyst for the next era of IP communications.

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About Cataleya

Cataleya is a leader in IP networking innovation, with a strong track record in developing and deploying next generation carrier grade switching systems, pushing the envelope in an all IP paradigm. Cataleya is headquartered in Singapore with its own technology development team in Silicon Valley and a wholly-owned subsidiary of Epsilon Global Communications. Cataleya is another outstanding result of Epsilon's innovation DNA and reflects a strong service provider influence in the design and functionality of its technology. A new approach to new challenges has led to a product of unparalleled performance, simplicity to operate and reduced cost of ownership.

www.cataleya.com



About Epsilon Global Communications Group

Epsilon is an award-winning enabler of connectivity services to communications service providers around the world. They operate the world's largest Global Network Exchange with 500+ network operators pre-connected and ready for their networks to be used to create tailor-made solutions for service providers globally. Their services portfolio includes managed networks, co-location, system integration, first line maintenance and access solutions for voice service aggregation. As a carrier neutral infrastructure provider, they operate and source the highest quality networks and services in more than 170 countries and build flexible network solutions for national, regional and international communications companies.

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