

WHITEPAPER

SUCCESS IN IP NETWORKING

A GUIDE TO MIGRATING FROM TDM TO IP

UPDATE: APR 2017

ACCELERATING THE MIGRATION

The migration from TDM to IP networks has been discussed in the telecoms industry for nearly a decade. With each year that goes by, carriers and service providers are gradually making the move to IP. What many of these players are finding is that it is easier to talk about IP than adopt it.

On the surface, the flexibility, scalability, and efficiency of IP networking makes sense but when it comes time to actually make the move from TDM it can be more complex than expected. Already many carriers and service providers have taken small steps in terms of IP adoption but have a long way to go to realise its full benefits.

The misconception is that IP is everywhere. That is certainly true of consumer VoIP services or the internet, but IP networks have yet to fully replace their TDM predecessors. Plenty of hard work has been done by organisations like the i3 Forum to facilitate the migration but it is still in the hands of carriers and service providers to make it happen. As Phillip Millet, chairman of the i3 Forum notes, "This is important now because we are reaching an IP tipping point."

The risk of not taking the migration seriously can lead to years of costly and resource-intensive project management and delaying the opportunity to capture new revenue from IP services. The efficient migration from TDM to IP requires understanding of where you are as an organisation and where you are headed in the future. With sound advice, you can make the steps to an all-IP network effective, efficient and fast.

A GROWING IP ECOSYSTEM

The drivers for the migration from TDM to IP are fairly straightforward. The trends toward IP networking have been happening for several years. What makes the migration critical is the acceleration in the adoption of services like VoIP, Unified Communications, HD voice and video, and cloud. In addition to what is happening today, IP will enable the future of machine-to-machine communications (M2M) and the Internet of Things.

While TDM remains the safe choice for delivering basic voice and data services, it is limited in its ability to enable new high performance applications and services. Carriers and service providers can't afford to wait and see any longer. Future profitability and new revenue streams depend on IP networks.

“

Carriers and service providers need to recognise where they are on their journey to an all-IP network so that they **make each step as effective and efficient as possible.**

It is critical that they accelerate the migration from TDM to IP now so they can capture new revenue from IP services and realise the full cost benefits of IP networking.

*Jerzy Szlosarek
CEO at Epsilon*

DRIVERS FOR CHANGE



WIDESPREAD ADOPTION OF CONSUMER AND ENTERPRISE VOIP

Growth in revenue from consumer and enterprise VoIP remains strong and is expected to reach \$88 billion by 2018, according to Infonetics Research.



THE RISE OF MOBILE DATA SERVICES COMBINED WITH LTE DEPLOYMENTS IS CREATING GROWING DEMAND FOR IP NETWORKS

Global mobile data traffic grew 69% in 2014, according to Cisco Systems. In 2014, mobile data traffic was nearly 30 times the size of the entire global Internet in 2000.



IP NETWORKS ENABLE NEW SERVICES SUCH A CLOUD COMPUTING AND M2M

Cloud computing and M2M depend on the flexibility and scalability of IP to meet their changing needs and the agility they require to be successful.



UNIFIED COMMUNICATION SERVICES BECOMING MORE POPULAR AMONGST ENTERPRISE CLIENTS

Unified communications has gone mainstream and is showing double-digit growth in most regions of the world. For example, Unified Communications as a Service (UCaaS) is expected to grow with a 50.1% CAGR in the Asia-Pacific region from 2013-2018, according to Frost & Sullivan.



HD VOICE AND VIDEO TO DISPLACE TRADITIONAL CONFERENCING SERVICES

HD voice and video have become a driver for loyalty and a way to reduce customer churn. They have also showed new ways for carriers and service providers to compete on quality and not cost.



IP NETWORKS ARE MORE FLEXIBLE AND COST EFFECTIVE TO OPERATE THAN TDM

TDM was built to reliably deliver basic voice and data services but no longer matches the requirements of new services and new revenue opportunities for carriers and service providers. It is too rigid and inefficient to deliver the next generation of communications services and applications.

BIG CHALLENGES

The challenge for carriers and services providers is to offer these services over IP and create new and lasting value with their IP networks. There is risk in not migrating fast enough and losing out to competitors or beginning the move to IP but not being able to drive new profitability due to inefficiencies in operations.

The commercial challenges show the definite 'rock and a hard place' that carriers and service providers reside in. Premium TDM service revenues are shrinking and are being replaced with IP and Ethernet services that are sold at a lower price. At the same time, there is a high CAPEX required to replace existing TDM infrastructures which will not deliver highly profitable revenue streams.

The combination of TDM revenue that is drying up and the high cost of upgrading TDM infrastructure means the move to IP needs to happen sooner rather than later. Upgrading legacy systems is not a viable solution but neither is operating two networks in parallel. The operational costs of having both a TDM and IP network make it very difficult to drive profitability from new services.

On the technical side, IP is widely considered as a "best effort" network, lacking quality of service features as well as offering limited visibility across networks. TDM compared to IP is heavily engineered and reliable due to the length of its deployment and redundant, hardware-based architecture.

TDM circuit switched networks are very secure compared to IP. IP networks are much more susceptible to security threats from malicious organisations. For example, there are no distributed denial of service (DDoS) attacks on TDM.

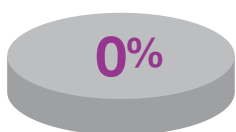
This is where it gets complex. TDM is reliable but has a commercial model that is slowly becoming extinct while IP offers a future that is limited by the QoS it is able to offer. So where do we go to from here?

“

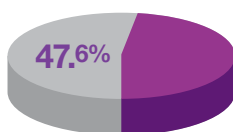
TDM circuit switched networks are **very secure** compared to IP. IP networks are much more susceptible to security threats from malicious organisations. For example, there are no distributed denial of service (DDoS) attacks on TDM.

HOW FAR DOWN THE ROAD IS YOUR ORGANISATION WITH REGARDS TO IPX AT THE CARRIER INTERCONNECT POINT?

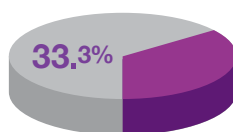
TDM network with no migration started yet



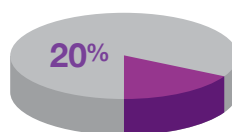
Mainly TDM with some IP



Mainly IP with some TDM



All IP



Epsilon Intelligent Network as a Service Webinar Survey 2015

THE JOURNEY TO IP

The best way to understand where you are headed is to look at where you are. For most carriers and service providers, the migration from TDM to IP is already happening but there are risks and pitfalls that:

STEP 1 **RECOGNISE THAT THE MIGRATION NEEDS TO HAPPEN**

Legacy technologies might be reaching end-of-life or there may be a desire to drive cost benefits with IP. Customers may also be asking for new capabilities that the carrier or service provider can't deliver. Internally there is a recognition that IP adoption is inevitable.

RISK: The recognition happens but no action is taken. The 'wait and see' approach can lead to loss of new revenue opportunities as well as a gradual irrelevance to customers in terms of services offered and networking capabilities.

STEP 2 **ASSESS THE SITUATION**

To fully assess where a carrier or service provider is going to move their migration forward requires a holistic perspective that takes into account both commercial and technical requirements. Planning for the migration to IP requires a complete solution with a future roadmap and the assessment of partners that can grow with the project.

RISK: The commercial or technical needs of the organisation are out of balance and neglect to focus planning on direct outcomes for customers. Technical achievement that does not create value is useless.

STEP 3 **TAKE CONCRETE STEPS**

Carriers and service providers can select vendors, partners and outsourcing experts to begin the roll out of new IP networks. This is the first stage of committing to certain technologies, models and partners. It is the first critical step to achieving success in IP networking.

RISK: Choosing long-term partners and avoiding vendor lock-in are crucial at this stage. To ensure the success of a long-term deployment, choosing partners that are able to grow with your organisation and network requirements of the future is key.

STEP 4 **AVOID OPERATING NETWORKS IN PARALLEL**

Equipment is being rolled out and project management with strict timelines for service roll out becomes critical. This is where managing change and having both internal and external expertise to support a rapid migration is important.

RISK: At this point, most carriers and service providers will be operating both TDM and IP networks in parallel. If the migration is not quick then the operational costs will grow and it will take longer to monetise new IP services. The longer this step takes the bigger the cost pain point it becomes.

STEP 5 **TURN OFF TDM**

The IP network has been rolled out and it is possible to decommission the TDM network and real estate. Internal staff are prepared to manage an IP network going forward and the customers are ready for use IP infrastructure.

RISK: IP network must be able to deliver proven QoS and quality of experience. Without that, turning off the TDM network will put service delivery at risk and possibly effect customer networks.

CAPTURE NEW REVENUE AND MONETISE IP

The carrier or service provider is fully on IP and is able to enjoy the cost savings of IP networks while building new products and services in all-IP environment. It is able to capture new revenue from new services while offering customers increased flexibility and scalability.

A SEAMLESS MIGRATION

The final steps of the migration are the ones that will take the longest to achieve but with the right planning and partner the whole migration can be seamless and rapid. From start to finish, having an experienced partner support a TDM to IP migration can mean the difference between success and failure. A partner with expertise in IP and experience in managing migrations can help to minimise risk along the way.

One of the most effective ways a partner can help is in facilitating the operations of two networks in parallel. TDM isn't going anywhere soon. It is still depended on to deliver basic services and generates revenue for carriers and services.

In this way, many carriers and service providers look for an outsourced solution for IP initially then as IP traffic volumes increase and TDM shrinks, they outsource their TDM networks to an expert partner. This enables them to get the best of both worlds without draining resources by operating two networks by themselves at the same time.

It is right in the middle of the transition to IP that is the most challenging to carriers and service providers. Operating parallel networks can negate all of the gains made by migrating to IP. With an outsourced network partner, the carrier and service provider can begin the migration to IP without fully moving away from its TDM business.

In a Voice, an outsourcing partner can provide conversion services or outsourced Sigtran support during the migration phase or a pure IP presence with intelligent networks. The outsourcing partner can create a solution that facilitates the migration and ensures it is seamless.

Similarly in data, the service provider may want to decommission or stop operating its existing SDH layer internationally but still have clients to support. It can then outsource that piece of its infrastructure to a partner. This drives cost-efficiency and reduces the need for internal staff and resources to be dedicated to a fading business area or revenue stream.

The partner is really an enabler for a seamless transition to IP by taking on the networking requirements as they are being phased in, as in the case of IP, and phased out, as with TDM. This allows the carrier and service provider to minimise risk while monetising new services that eventually feed into their complete migration to IP.

The journey to IP is happening but it can be faster, more efficient and profitable if carriers and service providers understand where they are, what partner support is available and the challenges and risks they will need to face.

“

In a Voice,
an outsourcing
partner can provide
conversion services
or outsourced Sigtran
support during the
migration phase or a
pure IP presence with
intelligent networks.
The outsourcing
partner can
**create a
solution**
that facilitates
the migration and
**ensures it is
seamless.**

ABOUT EPSILON

Epsilon provides connectivity and infrastructure solutions to Communications, Applications, Content and Cloud service providers. Its underlying network infrastructure, intelligent application layers and industry expertise enables its customers to seamlessly deliver mission critical, high performance applications and communications services globally. Epsilon offers a wide range of communications infrastructure services from network connectivity, co-location or data centre services and system integration through to an on-demand ordering platform for ethernet services and cloud access.

www.epsilontel.com

www.epsilon.tel

GENERAL CONTACTS

Europe: +44 207 096 9601 | **Asia:** +65 6813 4021 | **Middle East:** +971 4375 0300 | **USA:** +1 61 918 4001

Email: info@epsilon.tel