Network Transformation: Moving Class 5 Services to IP Networks

EXECUTIVE SUMMARY

The transformation of the legacy wireline communications network from TDM to IP has been a prominent and sometimes contentious topic in the telecom industry for almost a decade. The VOIP and multimedia evolution began in earnest in the core of the network, where carriers quickly discovered the cost and bandwidth efficiencies associated with converting long-distance and international voice traffic into packets and transporting it across routed IP networks. Commencing the PSTN dismantling project in the core made the most sense, due to the fact that the decommissioning of Class 4 switches could be carried out without causing any disruptions visible to subscribers. Circuit-to-packet conversions were being performed far from the periphery of the network and the notice of millions of subscribers, who were not required to update handsets or even modify the way they accessed telephony features.

The replacement of the Class 5, or end-office, portion of the PSTN is substantially more complex and risky than Class 4 replacement. This project not only involves thousands of more switches and billions of more dollars in capex than the replacement of core infrastructure, but carriers have also been extremely cautious to undertake it out of fear of disrupting their subscribers. An added complication is the fact that transforming the subscriber-facing edge of their infrastructure is so closely linked to the type and range of services that carriers will be able to deliver in the near future. Carriers are keenly aware that the future battles for customer loyalty will be won or lost by their ability to deliver personalized and flexible communications and entertainment services. A subscriber-facing infrastructure that limits their flexibility will ultimately hurt their competitiveness.

Most network operators have delayed this daunting transformation project, although a few select Tier 1 carriers have publicly unveiled ambitious plans to overhaul their Class 5 infrastructures. Evidence is mounting, however, that operators can no longer forestall Class 5 replacement. Competition, opex challenges, and continuing maintenance fees on switches serving a shrinking number of users are all applying pressure on carriers to deal with the hundreds or even thousands of Class 5 TDM switches still in their networks.

Network Transformation: Moving Class 5 Services to IP Networks offers an assessment of the current Class 5 switching market and examines the various evolutionary paths that carriers are most likely to follow in moving subscriber services to IP-based call control. The report also provides insight into carrier strategies for leveraging the buildout of their broadband networks to deliver primary-line VOIP and multimedia services. We also consider the future of the traditional softswitch and its chances of survival as carriers adopt call and session control technologies based on IP Multimedia Subsystem (IMS).
The report also details and analyzes the Class 5 to IP transformation strategies of 18 leading suppliers of softswitches, IMS-based session controllers, and application servers. Information presented includes key strengths and weaknesses of each supplier's approach, as well as up-to-date information on key customer wins for each company.

As operators embark on this crucial and business-altering phase of their network transformations, they face a daunting array of decisions that will influence the final disposition of their networks and, subsequently, the future viability of their businesses. Network Transformation: Moving Class 5 Services to IP Networks examines those decision points, as well as the various transformation options available from equipment suppliers. The report also examines how the current status of carrier network infrastructures and their previous investment in IP-based infrastructure will influence the direction and speed at which carriers will transform their networks, taking into account the pressures that are accelerating this transformation, the impact of past technology adoption, and the options available to carriers that are saddled with aging circuit-based end-office switches and experiencing significant line loss with each passing year.

Multiple factors are forcing carriers and service providers to confront the challenge of transforming the portions of their network directly involved in delivering or managing subscriber sessions. The most significant factors include:

- Terrestrial voice-line attrition
- Opex on legacy Class 5 switches
- Competition from alternative providers
- Fear of losing customers
- Aging infrastructure

The delivery of subscriber services over an IP infrastructure is a concern to multiple types of carriers, not just telcos. Internet-based service providers and some cable MSOs, for example, lack an existing TDM infrastructure and have the advantage of building up a subscriber-facing services infrastructure without having to deal with one of the most vexing problems for incumbent carriers: the disposition of aging and expensive TDM switches.

Excerpt 1: The Reach of IP Transformation

<table>
<thead>
<tr>
<th>TYPE OF CARRIER</th>
<th>RELEVANCE OF IP TRANSFORMATION</th>
<th>CURRENT IMPACT</th>
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</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>In addition to building out services infrastructure on top of a broadband network, carriers with fixed assets must also address the disposition of the existing TDM-based Class 5 network.</td>
<td>High</td>
</tr>
<tr>
<td>Mobile</td>
<td>While mobile carriers are largely focused on migrating network cores to IP, end-user voice services will utilize the TDM-based cellular radio access network for the next few years. However, the mobile data packet network, largely reserved for the delivery of non- and near-real-time services, is transitioning to IMS.</td>
<td>Moderate</td>
</tr>
<tr>
<td>Fixed &amp; Mobile</td>
<td>Carriers with both fixed and mobile assets are moving to IMS to create common session control and services layers for the delivery of new services to both mobile and fixed subscribers.</td>
<td>High</td>
</tr>
<tr>
<td>Cable MSOs and Internet Service Providers</td>
<td>Though most cable operators have only a few TDM switches to migrate, all MSOs and ISPs looking to offer voice services are utilizing existing IP networks.</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Source: Heavy Reading
Report Scope & Structure

Network Transformation: Moving Class 5 Services to IP Networks is structured as follows:

Section II examines the current state of major service providers' Class 5 infrastructure and considers the various evolutionary paths that operators are likely to follow in moving subscriber services to an IP-based infrastructure.

Section III presents several Class 5 replacement and migration scenarios, considering all the forks and twists that operators will need to navigate along the way in order to deliver the anywhere, anytime services they will need to compete in the future.

Section IV explores the step-by-step methods being considered by carriers to transform the subscriber-facing portions of their network, including possible procedures for service providers that are making a two-step migration to an IMS-based network after first adopting a softswitch, as well as those that are moving directly from TDM to IMS.

Section V analyzes the various IP transformation approaches offered by telecom equipment providers, including a detailed look at the competitive landscape and an in-depth analysis of the strategies, as well as the strengths and weaknesses, of nearly 20 equipment suppliers participating in the IP transformation market.

Network Transformation: Moving Class 5 Services to IP Networks is essential reading for a wide range of industry participants, including the following:

- **Technology suppliers**: How will the network operator migration from Class 5 technology to an all-IP infrastructure affect your product development plans? Where are the new opportunities for market growth? Are your products and marketing messages in line with customer plans and expectations? Are there significant gaps in your product line coverage that need to be addressed to meet future demand for Class 5 migration solutions?

- **Network operators**: How will the transformation away from Class 5 services affect your plans for next-gen service and technology deployments? What are the key pain points to avoid in your migration plans, and what are the hidden problems to watch out for? How will your existing infrastructure investments factor into your migration plans? Do your current suppliers deliver the best options for your network, or are there other alternatives that will deliver greater efficiency? Which technology suppliers are in the best position to meet your requirements?

- **Investors**: Which technologies and suppliers are emerging as the market leaders in the Class 5 transformation sector? How will network transformation plans affect individual product sectors, such as softswitches, session controllers, and application servers? What role will IMS play in carrier network transformations? What is the most likely timing for large-scale Class 5 migrations to take place?

Network Transformation: Moving Class 5 Services to IP Networks is published in PDF format.