

9 January, 2013

Re: Bell Labs Analysis – PSTN Industry Analysis and Service Provider Trends

To: Chris Hine, BT

Chris,

This letter summarizes the analysis Bell Labs delivered to BT in September 2012 as a Bell Labs Advisory Service, and is intended for BT to share with Ofcom. The results of the Bell Labs analysis were delivered in the form of a detailed technical report entitled, *Bell Labs Analysis – PSTN Industry Analysis and Service Provider Trends*; which contains our analysis of the current industry environment, and our findings of what major Service Providers (SPs) are doing.

Input data for the study was collected from a combination of public and non-public sources. The public information was assembled from third party reports and presentations, news articles and formal announcements. The non-public information was primarily gathered through interviews with subject matter experts deeply familiar with the networks and operations of various major SPs, worldwide. This work was developed specifically to identify how different Service Providers are approaching legacy PSTN as follows:

- Hardware management: conditions and parameters for technology refresh versus sustain
- Vendor management: e.g. contract extension, supply and support contracts, and timelines
- Spares Management: used equipment supply market and third party repair (opportunities and risk)
- Skills Retention: Telco and OEM skills, opportunity and risk as well as timelines
- Service/Infrastructure management: migration, approach to proactive management of legacy platforms

OVERVIEW OF FINDINGS

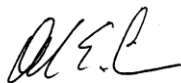
The study identified several trends common to all the SPs evaluated. Actions taken are either in response to market trends, government actions and/or are driven by the SPs themselves as best practices. All SPs are investing to maintain the performance quality of their legacy network through its End-of-Life (EoL), even if this reduces earnings margins. For this project, End-of-Life was defined as the point at which a component failure occurred which could not be replaced or repaired, that is, the point at which the first permanent failure occurred. Key findings and common activities across the SPs include:

- PSTN subscription rates for most SPs are in decline as subscribers move to voice over broadband (Cable or Telco) or mobile solutions. As a result:
 - Switch utilization rates are decreasing; SPs are consolidating and grooming their switching platforms to reduce power consumption and heat load, improve network efficiencies and free up equipment to be reused as spares.

- Subscriber-line rate erosion has been resulting in the decline of switch utilization levels as well. The lower utilization levels also facilitate the harvesting of parts from the switches to reuse as spares.
- All SPs looking to maintain their PSTN networks through EoL are taking measures to stockpile spares, including the above-mentioned consolidation and grooming. Other strategies are being used as well.
- Service providers all have an overlay next generation voice platform, based on or evolving to an IMS core, which has become an industry-wide standard solution for next generation voice. Current migration rates to next generation broadband voice platforms are exclusively driven by external (market and government) forces.
- When considering voice services only, the business case generally does not justify retiring PSTN assets and moving voice-only subscribers to next generation networks; revenues from triple play or broadband access must be considered in order to justify the case to move a subscriber. In certain cases, government subsidies may contribute to this income as well. This financial balance will change in the future as PSTN platforms approach EoL and operational expenses per subscriber line increase.
- Migration to next generation broadband voice is seen as an inevitable end state, due to PSTN technologies reaching eventual EoL. Although initial efforts are starting, migration is being implemented strategically in conjunction with SP's broadband access expansion, and is not expected to complete until approximately 2020 or beyond.
- A long-term concern is the loss of PSTN expertise as many technicians reach retirement age. SPs are taking various actions to retain this expertise within their companies.
- Proactive planning requires the collaboration of SPs with their customers, legacy and next generation equipment vendors and the appropriate government and standards bodies. This is needed to ensure that all planned capabilities and features of the PSTN are appropriately addressed in the next generation platforms.

In closing, this Bell Labs study analyzed the current industry practices and regulatory directions around the world regarding life cycle management of PSTN networks. SPs studied have similar issues and similar approaches, yet with different details in implementation, technology choices and timelines.

Thank you for the opportunity to do this study for BT. If we can be of further assistance, do not hesitate to contact me.



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Copy to: John Morden, BT