

Chapter I

Intelligent Networks: A Discussion of Current Developments

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INTRODUCTION

Recent years have seen a huge increase in the prevalence of desktop computing in homes and businesses worldwide. This has been fuelled, to a large extent, by the success of the Internet, which has clearly demonstrated the immense commercial potential of multimedia communications services. Exposure to the Internet has raised customer expectations of the service features that should be offered by the public telecommunications infrastructure, principally that they support a mix of media types and allow easy customization. Additionally, users expect that these services will be available on-demand, regardless of their location or the capabilities of their terminal equipment. Whilst the main technological components required to realize this vision are available, there remains a significant challenge in deploying them in a manner that is both cost effective and that can continue to meet the demands of a volatile marketplace.

As the level of interconnection between fixed, mobile, Internet and enterprise networks increases, a key component in ensuring their ongoing success will be the availability of a common platform for the development and delivery of communications services. Of course a key requirement for

operators who intend enhancing their service delivery capabilities is that existing systems are leveraged as much as possible rather than replaced outright. Many see the Intelligent Network (IN), which is today the prevalent means of providing services based on manipulation of voice call setup, as a starting point for the service delivery platform of the future. Currently a number of groups are proposing short-to medium-term evolutionary paths for IN that aim at overcoming limitations of existing systems. In this article we discuss some of these initiatives, show that taken together they may provide the basis of a flexible and open architecture, and identify a number of common trends and outstanding issues.

In the next section we outline the basic elements of the IN as it exists today. We then discuss some of the technical and commercial limitations that are currently driving the development of IN. The following three sections summarize Internet/information technology and PSTN (Public Switched Telephone Network) integration standardization work carried out by the IETF (PINT/SPIRITS), the Parlay consortium (Parlay) and the OMG (IN/CORBA Interworking) respectively. The final two sections identify important common trends in the development of IN and some issues for which immediate solutions are not apparent.

THE INTELLIGENT NETWORK

The IN provides the PSTN (Public Switched Telephone Network) with the infrastructure to provide advanced services such as freephone (1-800) and number portability. The Intelligent Network came into being in the mid-1980s as a way of decoupling telecommunications service logic from the call switching functions of exchanges. This facilitated centralized service processing functionality, eased the deployment of new services and reduced the escalating complexity of exchanges. IN standardization has taken place in ANSI, the ITU and ETSI. Unfortunately this distribution of standardization effort and the proprietary enhancements to IN by vendors have created a plethora of non-interworking IN solutions. Within geographical regions, for example, the US or Europe, there is sufficient agreement on standards that interworking is possible and, at least nominally, the ITU standard forms the basis for international interworking.

The basic IN model involves a distributed functional architecture which contains functional entities which are collectively responsible for handling any calls which use more sophisticated services than traditional call routing by dialed digits. Figure 1 shows the functional entities, their relationships and how these entities are typically grouped into platforms in a network. All

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