

Ecma TC32-TG17 white paper Next Generation Corporate Networks (NGCN)

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1 Background

Many enterprises and other organisations require their own telecommunications capabilities to support their own internal communications as well as supporting communications with the outside world. This avoids incurring unnecessary charges and provides added value in terms of security, services, features, integration with other enterprise applications, etc.. These capabilities are provided through enterprise telecommunication networks, otherwise known as corporate telecommunication networks (CN) or simply enterprise networks. Many administrations do not apply the same licensing conditions or regulation to enterprise networks and their internal traffic as they do to public networks and their public network traffic. Many public networks also offer optional services to corporate customers, such as hosted (Centrex) services and the leasing and maintenance of customer premises equipment.

Enterprise networks are in the process of a major evolution since the days of the circuit-switched Private Branch eXchange (PBX), which provided little more than voice and fax communications. In many organisations, voice and fax have migrated wholly or partly to the corporate packet-switched network based on the Internet Protocol (IP), thereby benefiting from a single network infrastructure. This gives many benefits, including one wire to the desk, the ability to use Wireless Local Area Network (WLAN) as an alternative to wired access, the possibility of running "soft phones" on Personal Computers (PCs), Personal Digital Assistants (PDAs), etc., and the ability to use off-the-shelf servers for network-based communications functions, such as "soft switches", voicemail servers, conference servers, etc..

Moreover, migrating voice communications to IP also provides the opportunity for additional capabilities, not possible, difficult or restricted with circuit-switched communications. One advantage is the ability to use high or variable bandwidths for enhanced audio quality and video. Another is the relative ease with which applications can be integrated with audio and video communications: this includes generic applications such as conferencing and unified messaging, and also business-specific applications such as customer relationship. Instant messaging, a half-way house between audio/video communications (requiring the presence of the communications partner) and traditional store-and-forward email, has grown enormously in popularity. Presence systems pull together the different communication modes and help prospective communication partners find the most appropriate means of contact.

A corporate or enterprise network that is based on corporate IP infrastructure and has its own applications and service provisioning is referred to as a Next Generation Corporate Network (NGCN).

2 Session-based business communications

Voice, whether or not it is accompanied by video, is still one of the most important means of communication within an enterprise and between an enterprise and its customers, partners and suppliers. It is essentially session-based, although it can also be used in messaging. The Session Initiation Protocol (SIP) has become the industry-standard signalling protocol for establishing communication sessions for voice, video, session-based messaging and session-based applications such as electronic white-board and presentation sharing.

NGCNs use SIP for establishing session-based communications within the enterprise, with other enterprises and with the general public. Whilst many deployments today use SIP and IP

within the enterprise but interwork with circuit-switched technology to communicate outside the network, the trend now is for SIP-based communications between enterprise and carrier networks. In this way, communications can use SIP and IP end-to-end between appropriately-equipped users and interwork with circuit-switched technology such as Public Switched Telephone Network (PSTN) only where necessary. Also enterprises don't need to operate their own gateways for interworking with the PSTN. One class of carriers that will offer a SIP-based interface to NGCNs comprises those carriers operating a Next Generation Network (NGN).

Another expected trend is direct SIP-based communication between enterprises over the Internet.

Extending SIP-based communications outside the enterprise to other enterprises and to carrier networks such as NGN brings a number of issues, including identification, security, Network Address Translator (NAT) and firewall traversal, the handling of emergency calls, quality of service, etc..

3 Enterprise mobility

An equally important trend in enterprises is towards providing communications support for mobile users. Many staff expect to be in communication from a variety of locations, including home, hotels, road and rail transport, cafes and restaurants, airports, stations, visited business premises and so on. Anywhere with wired or wireless Internet access can provide a link back to the corporate IP network using well-established Virtual Private Network (VPN) technologies. However, that is not always optimum from a cost and/or performance point of view, particularly for real-time audio/video communications. For example, when using a cellular network, the native audio capabilities of the mobile network might be more appropriate than VPN. Solutions are needed to allow users to roam to other networks in the most effective way. In order to use different access technologies according to available access point, dual or multi-mode devices are required. For some users, the ability to maintain seamless session continuity when moving between access points or even between access technologies is important.

Supporting secure mobility across a range of transports, both wired and wireless, inside and outside the office and inside and outside the enterprise-owned network, will become a key element of the enterprise communication future. Major open issues are currently provisioning, identity and device management across enterprise and public networks. In addition, to realize the full potential of mobile communications, communication services, including real-time services, should be presence-aware and fully integrated in the IT environment (workflow, business processes) of the enterprise.

4 Hosted capabilities

An important consideration is the fact that some enterprises make use of capabilities hosted by other operators for some or all of their communications. For example, a carrier such as an NGN can host enterprise users or host functions for communication between different parts of an enterprise network. As another example, an operator can provide infrastructure for hosting communications capabilities for a number of enterprises in a "multi-tenant" arrangement.

5 The role of Ecma TC32-TG17 in global standardisation

Ecma TC32-TG17 sees its role as a catalyst for putting in place the standards needed for communication within and between enterprises and with carrier networks, including the support of enterprise mobility. Two important deliverables to date include TR/91 on the subject of interoperation of NGCN with NGN and TR/92 on enterprise mobility. Current work is focused on updating these deliverables with a series of Technical Reports that extend the scope of the original work and keep it in line with the most recent advances in this field. In parallel with this, Ecma TC32-TG17, as a body and/or through its members, influences other organisations producing relevant standards, including ETSI TISPAN and various groups in the IETF such as SIP, SIPPING and SPEERMINT.