Just A Moment…
IT Commentary

Intelligence at the Edge

by Leon A. Enriquez

The dial tone and end-to-end closed loop connection for voice transmissions have been a familiar experience for the majority of telephone users. Based on the necessity of sending voice signals alone, circuit-switching technologies and transmissions have been deployed and utilised for the past hundred years without much need for change. This voice-only era of telecommunications networks stood unchallenged as an old world legacy.

Yes, the old world telecommunications was synonymous with voice. The sole focus was to provide easy voice connectivity. All the user needed to do was simply lift the handset at the workplace or home, dial a series of number, and once connected, the circuit-switching analogue system did a fairly good job of keeping the two-way voice communication going.

From a design standpoint, the essential intelligence was built primarily at the core infrastructure of the vast and complex telecoms exchanges. Everything else at the periphery e.g., the multitude of hardware devices at the edge were really quite dumb.

Specifically, in this case, the telephone handset was a dumb equipment without any need for intelligence. After all, operational control and circuit-switching were resident and proprietary in the monolithic telephone exchanges.

Obviously, there was no need for interoperability in an analogue world where infrastructure system vendors locked in their offerings, making any subsequent upgrades more or less a monopoly of some sort.

Then, in the mid-90s, the Internet came along, with the advent of the World Wide Web, helped in no small measure by HTML. In rapid progression, the innovative software program or the now familiar Web browsers emerged with a friendly user interface. And for the first time, information exchange became possible almost seamlessly.

The conduit of such multi-format data transmissions was fortunately already in place prior to this digital revolution. Among the many compelling innovations involved breakthrough technologies of data networking converging with the traditional voice-based telecommunications legacy.

Convergence meant that in addition to voice, data, video, newly-evolving information formats would result in a much richer multimedia experience for the users.

With increasing demands placed on the telecoms carriers and service providers, there was a direct impact on the existing infrastructures which could not cope with the need for more services and more bandwidth requirements. Consequently, this spurred new efforts in pushing even more innovative yet disruptive technologies to the forefront to address and deliver the sought-after solutions.

Compared to the old analogue systems, the increasingly packet-based new world infrastructure of digital telecommunications meant a migration of the complex intelligence away from the core and closer to the edge of the networks. The resulting impact is a network edge where more and more devices are getting smarter.

In reality, the dawn of the new digital age has come. Even now, the progressive deployment of third generation wireless technologies are pushing the digital world into a new phase.

The stage is now set for empowering all sorts of electronic devices, from desktop PCs to laptops, from handphones to personal digital assistants, and all sorts of digital devices embedded with an electronic chip and the memory capable of intelligent functions in a thousands of variations and combinations.

This new millennium is really a turning point in the history of pervasive communications. In this era, the individual user is empowered with the option of real-time, on-line connectivity at his or her discretion regardless of geographic location, and round-the-clock if the need becomes a necessity.

The mere proliferation of such intelligent devices of a hundred different permutations means that the digital revolution has reached a critical mass of ubiquitous connectivity any time, any where and on any device of your choice.

Better still, the interesting conclusion that we can arrive at is future is already here. This is the world of the "webtone" where connectivity and availability is always on.

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