

Source: Vodafone AirTouch

Title: Call for Global Unification of IP Network Standardization for the Wireless Industry

Agenda Item: 10

1. Introduction

There is growing interest in the wireless industry for purely IP-based core network architectures, which provide integrated delivery of all services: voice, data and multimedia, with associated Quality of Service (QoS) control. A popular term in the wireless industry, the *Next Generation Network* (NGN), is used in this document interchangeably with such all-IP wireless core network.

The 3G.IP consortium has recently developed service requirements and an associated NGN reference architecture, which are currently under study for feasibility by 3GPP. To this end an ad-hoc group has been formed under TSG-SA, WG2 to address the 3G.IP service requirements and network architecture. It is likely that, given the current momentum generated by 3G.IP regarding the NGN, a standards working group will soon be formally created in 3GPP tasked to develop an all-IP network option for the UMTS Release 2000 standard.

In serving the interests of the EDGE and UMTS communities, the 3G.IP/3GPP NGN architecture currently addresses only ERAN and UTRAN radio access technologies.

3GPP2 currently leads the cdma2000 based standardization effort. To date the TSG-P subcommittee in 3GPP2 has been chartered to develop VoIP (Voice over IP) services and network standards. However, only limited activity on this work has occurred thus far, primarily due to participating members' focus on completing the cdma2000 packet data network standard by YE99. To attain parity in IP-based service features and architectures with 3GPP, development of an all IP based network architecture will likely ensue within 3GPP2.

2. Recommendation

We strongly advocate that impending development activity of NGN standards should be unified across 3GPP and 3GPP2 organizations. A single, global standard for the IP core wireless network ultimately best serves the business interests of all operators and manufacturers. To date, efforts in global harmonization of 3G radio standards have resulted in limited success, arguably due to key technical differences between the competing radio access technologies. However, we believe that sufficient commonality in service requirements and network functionality exists for voice and multimedia services delivery in NGNs, independent of RAN technology, to warrant such unification of standards development. The resulting advantages for such approach include:

- Avoidance of duplication in standardization efforts worldwide;
- Establishment of clear focus and common “playground” for participation by all interested stakeholders, including equipment manufacturers and operators;
- Minimization of the number of options in eventual standards with consequent cost benefits to all stakeholders;
- True facilitation of 3G standards harmonization across 3GPP and 3GPP2.

3. Requirements and Architecture

The all-IP Architecture Focus Group within TSG-SA WG2 has made some progress on the architecture definition to support UTRAN and ERAN [1]. This work is still preliminary and is likely to evolve as all-IP Services and Requirements are more clearly defined and better understood. It is conceivable that service capabilities and requirements, as well as refined architecture, be used as the baseline for the unified standardization activity in a contribution driven process.

The 3GPP core IP draft network architecture already supports alternate access network technologies. One such important access network (with associated service capabilities and core network architecture) is cdma2000. The referenced draft architecture can be modified to include the cdma2000 RAN and packet data network. A unified IP core network architecture would incorporate key elements of the packet data network standard being developed for cdma2000 networks by 3GPP2 TSG-P and TIA TR-45.6, derived from the current baseline architecture for the cdma2000 packet data network [2].

As in [1], issues to be addressed in developing the unified NGN standard include support for R99 terminals, QoS control, and roaming interoperability.

4. Conclusion

This contribution proposes the unification of IP core network standardization effort across the 3GPP and 3GPP2 membership. The advantages of this approach have been described. It is also proposed that the baseline NGN architecture leverage the current 3G.IP reference architecture, with modifications to include all IMT-2000 network families, including cdma2000 and W-CDMA.

5. References

- [1] “3rd Generation Partnership Project; Technical Specifications Group Services and Systems Aspects; Architecture for an All IP network”, 3GPP TR 23.xyz V0.0.3 (1999-07).
- [2] “Wireless IP Network Architecture based on IETF Protocols”, PN-4286 Ballot Version, TIA TR-45, June 28, 1999.