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Supporting Groupware in Mobile Networks

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Abstract

The widespread availability of the Internet has enabled the use of many groupware and collaborative computing applications (chat, ICQ, NetMeeting, Exchange, Lotus Notes, Webex, desktop video conferencing, etc.). With the advance of wireless personal communication, such groupware applications are becoming popular in cellular and mobile networks [35]. For example, major cellular providers (Verizon, Nextel, Orange) offer, or plan to offer soon, group services such as push-to-talk (PTT) [23, 39]. The PTT cellular revenue, which was $84 million in 2003, is expected to reach $10.1 billion by 2008; and the 2.3 million PTT cellular subscribers community of 2003 is expected to grow to 340 million by 2008 [42]. While traditional PTT is limited to voice, the emerging convergence expected in *beyond-3G (B3G)* will merge real-time and non-real time aspects of group communication.

There is strong evidence that future wireless network infrastructure will conform to the TCP/IP architecture and its related supporting mechanisms for real time applications (VoIP, VCoIP), QoS, and mobility. TCP/IP is rapidly being adopted by emerging standards for cellular networks [1, 2, 26], not only at the transport layer, but also at higher level standards such as the session initiation protocol (SIP). This trend enables the convergence of cellular networks with the global Internet [14]. At the same time, low-cost and high-speed wireless access to IP networks is becoming widely available via WiFi access points and WiMAX base stations. Freed from the wire constrains, Internet endpoint devices are becoming smaller, lighter, and easier to operate under mobility conditions. These two parallel trends are leading to gradual convergence between the previously separate worlds of cellular and wireless IP, both at the mobile device level and at the network infrastructure. Given the importance of groupware, the converged wireless network should support cross-network group services for both real-time and data communications.

Consequently, a clear missing link in this evolution is the lack of comprehensive support