Abstract

Smart grid is predicted to meet the 21st century energy needs in a sophisticated way with real time approach by incorporating the most recent digital communications and highly developed control technologies to the existing utility grid. It will connect the global users through energy efficiency and awareness corridor. Highly flexible, safe and bi-directional communication infrastructure for data exchange is the stepping stone for the success of smart grid vision. Conventionally, wired communication is the primary option for monitoring, protection and control of power systems. With advent in communication technologies, the wireless technologies have also come out as a prospective contender for data communication in various industrial applications. Wireless technologies have distinct advantages over wired in terms of higher mobility, lower installation cost and faster deployment among others. The deployment of wireless technologies for monitoring and control systems of Smart Grid namely WAMS has been largely unexploited area. This paper devises a systematic approach that identifies the communication requirements of WAMS, defines the capability of various wireless technologies such as Wireless LAN (WLAN), Wi-Max, Wi-Fi, GSM, GPRS etc. based on performance criteria and selects the potential wireless communication technologies for WAMS based on closest match. The WAMS communication requirement specifications have been arrived based on Indian Smart Grid case studies.