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Sinopsis

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This book explains the functional parts of a WiMax system and its basic operation. You will learn how WiMax can use base stations to provide high speed data connections that can be used for voice, data and video services to distances of over 30 km. The original WiMax system was designed to operate at 10-66 GHz and it had to change to offer broadband wireless access (BWA) in the 2-11 GHz frequency range. To do this, the WiMax standard includes variants (profiles) that use different combinations of radio channel types (single carrier -vs- multicarrier), modulation types, channel coding types to provide fixed, nomadic or portable services. WiMax can provide multiple types of services to the same user with different QoS levels. For example, it is possible to install a single WiMax transceiver in an office building and provide real time telephone services and best effort Internet browsing services on the same WiMax connection. To do this, WiMax was designed to mix contention based (competitive access) and contention free (polled access) to provide services which have different quality of service (QoS) levels. You will learn about WiMax protocols and how they are designed to allow for point to point (PTP), point to multipoint (PMP) and mesh networks. Operators can use the mesh configuration to allow it to link base stations without the need to install or lease interconnecting communication lines. Some of the services WiMax operators can provide include leased line, residential broadband, commercial broadband and digital television (IPTV) services. WiMax can use radio channel bandwidths that can vary from 1.25 MHz to 28 MHz and data transmission rates can exceed 155 Mbps. The types of data connections on WiMax radio channels include basic (physical connection), primary (device control), secondary (configuration) and transport (user data). You will learn about the typical range for WIMAX systems and how to extend the range of WIMAX systems through the use of directional antennas.