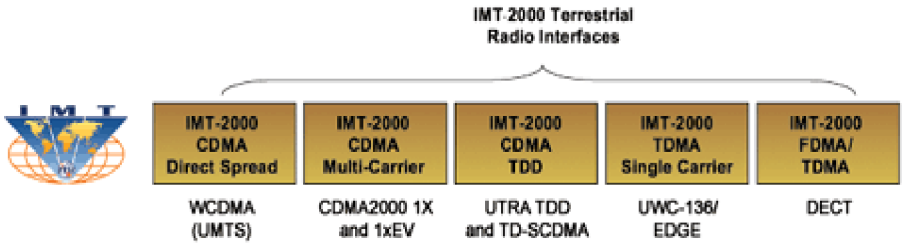
3G Technology: CDMA2000

CDMA2000 is 3G

Third Generation (3G) is the term used to describe the latest generation of mobile services which provide better quality voice and high-speed data, access to the Internet and multimedia services. The International Telecommunication Union (ITU), working with industry bodies from around the world, has defined the technical requirements and standards as well as the use of spectrum for 3G systems under the IMT-2000 (International Mobile Telecommunications-2000) program.

The ITU requires that IMT-2000 (3G) networks, among other capabilities, deliver improved system capacity and spectrum efficiency over 2G systems and that they support data services at minimum transmission rates of 144 kbps in mobile (outdoor) and 2 Mbps in fixed (indoor) environments.

Based on these requirements, in 1999 the ITU approved five radio interfaces for IMT-2000 standards (Recommendation 1457). Three of the five approved standards (CDMA2000®, TD-SCDMA, WCDMA) are based on CDMA. CDMA2000 is also known by its ITU name, IMT-2000 CDMA Multi-Carrier (MC).



The world's first 3G commercial system was launched by SK Telecom (South Korea) in October 2000 using CDMA2000 1X. By the end of 2005, there were close to 170 commercial CDMA2000 (1X and 1xEV-DO) and WCDMA systems serving more than 275 million users across all continents. CDMA2000 is the most widely deployed 3G technology today.

CDMA is expected to become the dominant wireless platform worldwide in the future as 3G CDMA (CDMA2000 and WCDMA) take market leadership from second-generation (2G) GSM. The Yankee Group forecasts that by 2008, some 860 million subscribers (or 35 percent of the global market) will use 3G CDMA technologies.

The CDMA2000 Family of Technologies

CDMA2000 represents a family of standards and includes CDMA2000 1X and CDMA2000 1xEV-DO technologies.

- CDMA2000 1X can nearly triple the voice capacity of cdmaOne™ networks and delivers peak packet data speeds of 153 kbps (Release 0) or 307 kbps (Release 1) in mobile environments in a single 1.25 MHz channel.

- CDMA2000 1xEV-DO (Evolution-Data Optimized) is a data centric technology that allows operators to offer advanced data services.

    - CDMA2000 1xEV-DO Release 0 delivers up to 2.4 Mbps data speed; in commercial networks it delivers 300-600 kbps in a single 1.25 MHz channel, the highest data rates of any wireless technology deployed today. It s upports the most advanced data applications, such as MP3 transfers and video conferencing, TV broadcasts, video and audio downloads. It has been commercial since 2002.

    - CDMA2000 1xEV-DO Revision A (Rev A) delivers peak data speeds of 3.1 Mbps on the downlink and 1.8 Mbps on the uplink and incorporates quality of service (QoS) controls to manage latency on the network . With Rev A, operators will be able to introduce advanced multimedia services, including voice, data and broadcast over all-IP networks. Rev A will be commercially available in 2H 2006.

    - CDMA2000 Revision B (Rev B) standard will be published in the first half of 2006. Rev B introduces a 64-QAM modulation scheme, and will deliver peak rates of 73.5 Mbps in the forward link and 27 Mbps in the reverse link through the aggregation of 15 1.25 MHz carriers within 20 MHz of bandwidth. A single 1.25 MHz carrier and an aggregated 5 MHz carrier in the forward link will deliver a peak rate of up to 4.9 Mbps and 14.7 Mbps, respectively. In addition to supporting mobile broadband data and OFDM-based multicasting, the lower latency characteristics of Rev B will improve the performance of delay-sensitive applications such as voice over Internet protocol (VoIP), push-to-talk over cellular, video telephony, concurrent voice and multimedia, and massive multiplayer online gaming. Rev B will be commercial in 2008.

- CDMA2000 1X and CDMA2000 1xEV-DO are backward compatible with cdmaOne.

Advantages of CDMA2000

CDMA2000 benefited from the extensive experience acquired through several years of operation of cdmaOne systems. As a result, CDMA2000 is a very efficient and robust technology. It delivers the highest voice capacity and data throughput using the least amount of spectrum, and it can be used to provide services in urban as well as remote areas cost effectively.

The unique features, benefits, and performance of CDMA2000 make it an excellent technology for high-voice capacity and high-speed packet data. Since CDMA2000 1X supports both voice and data services on the same carrier, it allows operators to provide both services cost efficiently. CDMA2000 1xEV-DO is optimized for data and is capable to support large volumes of data traffic at broadband speeds. 1xEV-DO is well suited to provide high-speed data services to its mobile subscribers and/or broadband access to the Internet.

Due to its optimized radio technology, CDMA2000 enables operators to invest in fewer cell sites and deploy them faster, ultimately allowing the service providers to increase their revenues with faster Return On Investment (ROI).

The CDMA2000 evolutionary path was designed to minimize investment and the impact to an operator's network without service interruption for the end-user. This has been achieved through backward and forward compatibility, hardware reuse, in-band migration and hybrid network configuration. This unique feature of CDMA2000 technologies has provided operators a significant time-to-market advantage over other 3G technologies.

Key advantages of CDMA2000 technologies include:

- Increased Voice Capacity
- Higher Data Throughput
- Multicast Services
- Frequency Band Flexibility
- Migration Path
- Serves Multiple Markets
- Supports Multiple Service Platforms
- Full backward compatibility

CDMA2000 Deployments

The first 3G networks to be commercially deployed were launched in Korea in October 2000 using CDMA2000 technology. CDMA2000 dominates the 3G market today and analysts forecast that it will continue to lead in the future.

Source:

- www.cdg.org
- www.imt-2000.org

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