Экономия бензина

http://depositfiles.com/files/zsxl7kqoq

Tak.ru

Archives

вторник, 1 сентября 2009 г.

History of GSM

1 GSM Development

Mobile telecommunications technology began as early as 1920s when the mobile telecommunications system for shortwave developed first at that time. The first public bus telephony system in 1946 served as the basis for modern public mobile telecommunications system.

Following the development of telecommunications technologies such as mobile radio transmission, channel management and mobile switching, various mobile telecommunications systems like cellular phone, mobile call, land cellular mobile telecommunications and satellite mobile telecommunications also emerged rapidly.

Since 1980s, cellular mobile telecommunications has developed from the first generation of simulation cellular mobile telecommunications system to the second generation of digital cellular system. Established in Europe, 1991, GSM is a global system for digital cellular mobile telecommunications and has gained unprecedented development because of its public standards worldwide and strong roaming ability. According to global mobile telecommunications system institution, the number of GSM subscribers is expected to reach 1 billion in over 206 roaming countries by early 2004. GSM mainly provide voice service and low speed data service. Compared with the first generation, GSM has such distinct features as high security, strong anti-interference ability, high spectrum effectiveness and capability with the mean frequency reuse coefficient less than 7.

2 GPRS Development

General Packet Radio Service (GPRS) is a new bearer service based on the current GSM system. It can be regarded as the application of GSM in IP and X.25 data network, and also as the application of internet in radio service. GPRS can be used in FTP, WEB browser, E-mail etc

The primary difference between GPRS radio packet data system and the current GSM voice system is that GSM is a circuit-switched system while GPRS is a packet switched system. The basic process of packet switching is to divide the data into several small packets and transfer them to the destination in a storage-switch way through different routes, and then arrange into complete data.

Radio channel is a very rare resource in GSM system. Each channel can only provide a transfer rate of 9.6kbit/s or 14.4kbit/s in circuit-switched system. Combining several slots together provides higher rate, but it can only be enjoyed by one subscriber and is not feasible considering cost-efficiency. Packet switched GPRS can arrange the mobile channels in a flexible way to serve many GPRS data subscribers and make full use of the radio resource. GPRS can theoretically combine a maximum of 8 slots together and provide a bandwidth as high as 171.2kbit/s shared by many subscribers. GPRS is a great leap for GSM system in radio data service which provides a convenient and highly efficient radio packet data service at low costs.

GPRS is especially for interrupted, burst, frequent or small data transmission. It is also adopted in burst large data transmission. Most mobile internet protocols have such features.

According to the GPRS proposal made by ETSI, GPRS can be divided into two stages after commercial use. In the first stage, it offers services such as E-mail, internet browsing. The second stage of GPRS is based on EDGE（E-GPRS）.

EDGE is a high rate mobile data standard with a data transmission rate as high as 384kbit/s. EDGE can greatly improve the efficiency of GPRS channel coding and fully meet the requirement for broadband in the future radio multimedia application. Different from the current GSM system, EDGE adopts a modulation technology recommended in the 3G mobile telecommunications. As a transition from GPRS to 3G/UMTS, EDGE finished its feasibility study and got ETSI approval in 1997. The standardization process of EDGE consists of two stages. The first stage focused on the enhanced GPRS (EGPRS) and enhanced circuit switching digital service (ECSD) and standardized in 1999. The second stage defined the improved multimedia and real time services and standardized in 2000. EDGE enables network operators to make full use of the current radio network equipment during the transition from GPRS to 3G/UMTS. EDGE has the following primary features:

1) EDGE has a high rate. The current GSM network mainly uses Guassian Minimum Shift Keying (GMSK) modulation. EDGE adopts Octal Phase Shift Keying (8PSK) modulation with a rate of 384kbit/s in mobile environment and 2Mbit/s in static environment, which generally meets the requirement of the third mobile telecommunication system and all kinds of radio application.

2) EDGE supports both packet switched data transmission and circuit switched data transmission at the same time. The timeslot rate of packet switched service with EDGE is as high as 11.2-69.2kbit/s, and for circuit switched service, this rate can reach 28.8kbit/s.

3) EDGE supports both symmetric and asymmetric data transmission. It is a very important feature for mobile network and other data services. In EDGE system, subscribers can enjoy a downlink rate higher than uplink rate.

4) Technically, EDGE is an improvement for radio interface. To a large extent, it can be regarded as an effective general radio interface technology which promotes the 3G evolution for cellular mobile system.

3 Evolution to 3G

In order to uniform the global mobile telecommunication standard and telecommunication band, realize 3G global roaming, and improve the spectral efficiency and the data service transmission rate to meet the requirement of multimedia service, International Telecommunications Union -Radiocommunication Sector（ITU－R）began the study on the 3G mobile telecommunications 14 years ago. By June 30th, 1998, the calling deadline for the standard of the 3G mobile telecommunications radio transmission technology (RTT), ITU－R had received sixteen 3G RTT standard resolutions consist of six resolutions for satellite mobile and ten resolutions for land mobile from America, Europe, China, Japan, South Korea etc The TD－SCDMA standard resolution proposed by China is one of the ten land mobile 3G RTT resolutions.

ITU－R raised the following requirement for the 3G:

Live

Hit

Постоянные читатели

—— high speed land mobile:
FDD: terminal at 500km/h mobile speed provides a transmission rate of 144kbit/s.
TDD: terminal at 120km/h mobile speed provides a transmission rate of 144kbit/s.
—— medium and low speed land mobile:
FDD and TDD: terminal at medium and low speed provides a transmission rate of 384kbit/s.
—— land walking and indoor fixed terminal
FDD and TDD: terminal at walking speed or in fixed condition provides a transmission rate of 2Mbit/s.
According to 3G standard requirement, ITU－R carried out a two-year study on ten land mobile standard resolutions in terms of evaluation, emulation, integration, key parameter confirmation and finally approved five technical specifications (including that proposed by China) for radio transmission in Turkey ITU－R plenary meeting in May 5th, 2000. Among these five specifications, three are based on CDMA and two are based on TDMA.
—— specifications based on CDMA:
IMT－2000 CDMA DS（WCDMA、cdma2000 DS）
IMT－2000 CDMA MC（cdma2000 MC）
IMT－2000 CDMA TDD（TD－SCDMA、TD－CDMA）
—— specifications based on TDMA:
IMT－2000 TDMA SC（uwc 136）
IMT－2000 TDMA MC（DECT）
Since TDMA is not a mainstream in the 3G, TDMA SC and TDMA MC are used as regional standards for upgrading IS－136 and DECT system. The three RTT specifications based on CDMA, also called one family, three members, become the mainstream in the 3G. Both CDMADS and CDMAMC are frequency division duplex (FDD). CDMA TDD is time division duplex (TDD). ITU－R assigns independent band for 3G FDD and TDD; Therefore, FDD and TDD are coexistent and complementary with each other. Considering core network signaling adaptation and public core network resource, most GSM network operators choose UMTS/WCDMA. Although 3G is called radio broadband multimedia, in fact, the primary task of 3G is to solve the problem of increasing voice service. In China, the current bandwidth is already not in line with the rapid increase of the voice subscribers. Voice service with 3G network can not only meet the requirement of the increasing subscribers but also help to reduce costs and improve service ability. The overall building costs of 3G network voice service is expected to be just half of that of 2G network voice service. Meanwhile, the high-quality voice service at low costs enables subscribers to explore more services 3G provides, such as videotelephony, multimedia and other data services. During the initial stage, UMTS coverage may not as large as that of GSM, together with the uneven development of 3G worldwide; therefore, the terminal should be GSM/UMTS dualband and support GSM －UMTS roaming and system switching, in order to solve the problem of service continuity and cross-operator roaming. In UMTS coverage area, dualband terminal can enjoy UMTS high rate data service and voice service as well. In the dead zone of UMTS, dualband terminal subscribers can still get support from GSM voice service and low rate data service.
Therefore, GSM network will continue to provide voice service and low rate data service for a long time in future. It is a long term task to carry out GSM network optimization and GSM radio planning for the future 3G building.
Автор: ourdot на 3:20

0 коммент.:

Отправить комментарий

Подпись комментария: Выбрать профиль...

Отправить комментарий Просмотр

Следующее Главная страница Предыдущее

Подписаться на: Комментарии к сообщению (Atom)