



Conditional Access System makes sure those users who paid can watch while preventing free riders by controlling the program's scrambling and managing subscribers' authorization in digital TV system.

### System functions

1. Controlling the scrambling of TS
2. Managing and delivering the accessing and subscribers' authorization information
3. Managing and delivering encrypted CW, key and control order

### Security

1. Adopting common encryption algorithm, multi-layer key encrypting circulation system
2. Keyword updating randomly (5~10 seconds), key updating controlled (sending EMM in air)
3. Adopting broadcasting mode transmission or

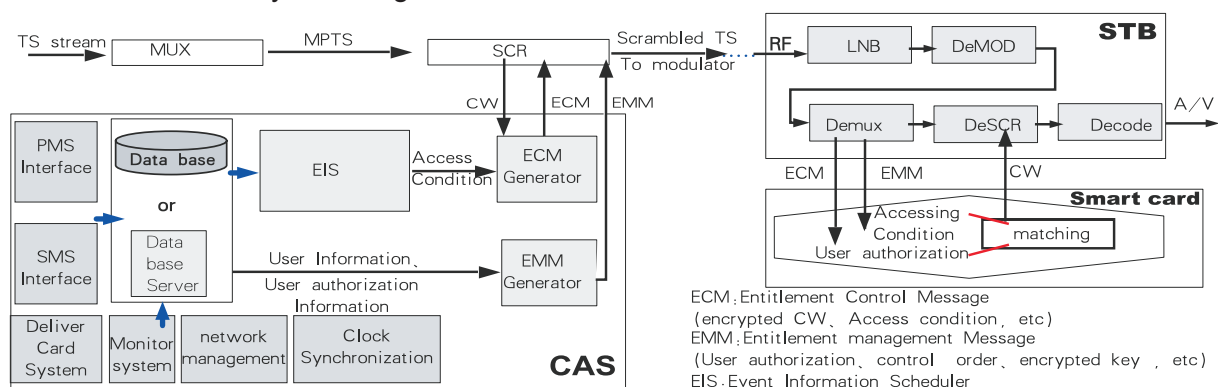
users such as pausing authorization and deleting selected number of smart cards etc.

4. Supporting valid period control of authorization information to prevent subscribers' televiewing from overdue authorization
5. Smart card security technology
  - 1) Adopting high security CMOS chip
  - 2) Smart card COS is developed by Communicate itself to ensure security
  - 3) Using various technologies to protect security of data.
  - 4) Adopting common and special encryption algorithm to protect the security of data transferring
  - 5) Code applications and algorithm downloading
6. Authorization mechanics and safety strategy. No in-break record worldwide

### Standard and compatibility

1. Compatible with international standard having its own SYSTEM ID being registered in DVB organization

### Conditional Access System Diagram





2. Deployed the first simulcrypt solution in china (CETV). Fully complying with EN 103 197 Simulcrypt standard. The Simulcrypt has been accomplished with main CAS products that receiving certificate of network access from the State Administration of Radio Film and Television of CHINA
3. Be able to integrate with main SMS, multiplexers, scramblers and STB

#### Main features

1. Supporting redundant backup of whole system and having higher efficiency and error recovering ability
2. Real-time monitor of the operating status of system and each component from CAS network management
3. Various control, customizing and authorization modes of products with flexible packaging sales strategy, the same program can be sold in different packages.
4. Supporting OPPC, OPPV, IPPV, IPPV-T
5. Powerful addressing function: including individual addressing, group addressing and logic addressing
6. Supporting regional/subscriber control, setting attribute according to addressing mode
7. Application can be downloaded on STB or smartcard which change the receive and control functions
8. Short messages system: recharge, query and transfer, order and complaint by transmitting short message providing in wireless network
9. Information transfer function: OSD or B\_MAIL
10. Region control function: controls subscribers ranging combining with regional address and

control information

11. Frequency jumping function: force STB jumping to appointed frequency and service ID
12. Seed and mother card function: solve matter of one account with various TVs. Seed card is controlled by mother card, and need timing authentication of mother card
13. Parent level protection: subscribers can set program levels restriction on STB
14. Fingerprint control: protect value programs such as movies, special topic, gym program setc.
15. Anti-record control: program transferring can be set to allow or forbid to record
16. STB and card pairing: one smart card tied to the only STB to defend pirate
17. Multi-level CA system (supporting 4 levels CA)
18. Flexible program authorization function: Free authorization, preview authorization, 10 minutes to 455 days advanced authorization from the first watching

#### Performance parameters

1. Maximal subscribers account managed: 3 million
2. Channel account can be controlled:  $8 * 256 = 2048$ , classifications: 256, topic/levels: 256
3. Maximal sector account: 4 (each sector has absolute key data, supporting multi-level authorization)
4. Maximal program providers: 8
5. Transmission rate: EMM 100-1500 packet/s (bandwidth 0.15-2.2 Mbps), ECM 2-5 packet/s/channel
6. 20T Scan can be controlled by one ECM G and EMM G



Bidirectional Conditional Access System is the new generation CAS that R&D independently by communicate which adopts fully bidirectional complete channels in head-end and STB and has whole function of Communicate CAS. This system is more safe and reliable adopting PKI technology. Subscribers can choose alternative services such as VOD, games, guess, shopping, remote education etc which increases more profit to the operator. As a key technological guarantee, Bidirectional CAS brings new opportunity to operators.

### Main features

1. Supporting various identity authentications such as digital sign, digital certificate
2. Supporting bidirectional channel protection
3. Supporting various bidirectional services, supporting broadcasting service and bidirectional service
4. Broadcasting authorization information received rapidly in lesser bandwidth, while getting authorization information from bidirectional channel

### Other features

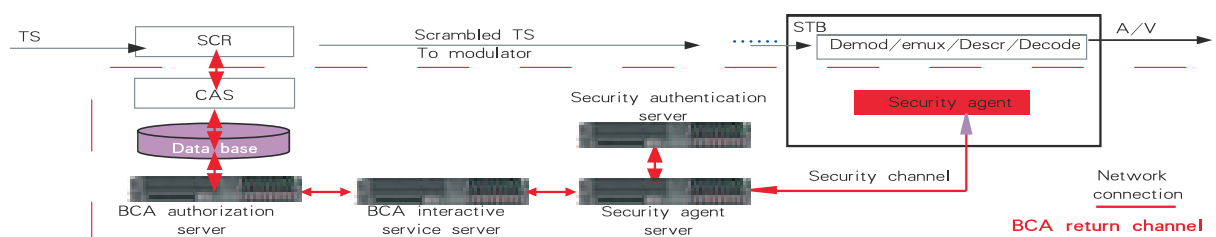
1. Compatible with international standards, following DVB simulcrypt standard
2. Open system which could be integrated with

various devices

3. Supporting the whole system redundant backup
4. CAS network management, real-time monitor
5. Various control, customizing and authorization modes of products with flexible packeting sales strategy
6. Individual addressing, group addressing and logic addressing; regional control and subscriber (group) control
7. STB application and smartcard encryption arithmetic download
8. Short message system (recharge, order etc)
9. Supporting OSD, B\_MAIL
10. Supporting OPPC, OPPV, IPPV, IPPV-T
11. Several on-line functions, such as on-line statistical of watching rate, ordering programs, applying for key and authorization
12. Supporting region control, frequency jumping
13. Supporting parent level protection, fingerprint, password control, and anti-record control
14. STB and card pairing
15. Seed and mother card control
16. Multi-level CAS system
17. Free authorization, preview authorization and 10 minutes to 45 days advanced authorization from the first watching

Alternational service: VOD; Games; Guess; Shopping; Remote education; Karaoke; WEB service

### Bidirectional Conditional Access System Diagram





Subscriber Management System is an integrated management platform providing multivariate service for operators. It transfers authorization to CAS according to the subscriber's order and charges. Communicate SMS is compatible with EUROCRYPT standards.

### System functions

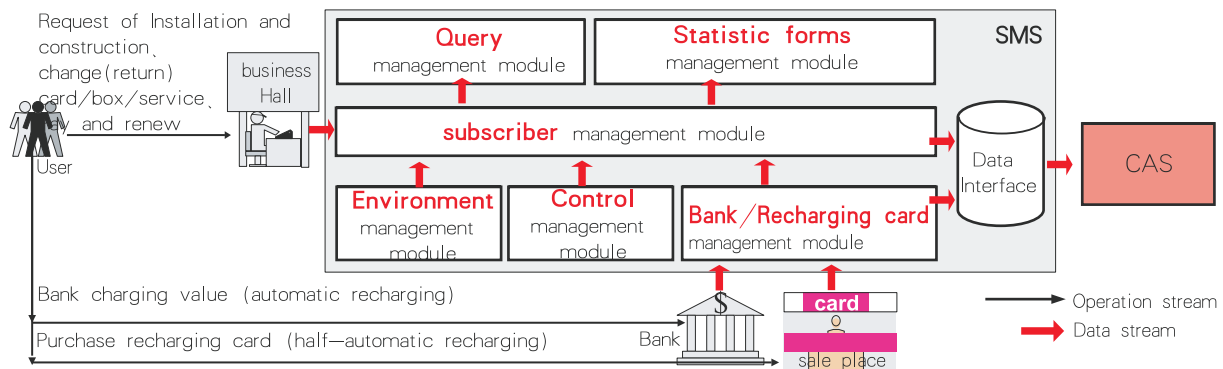
1. Managing paying and adding charge, installation, construction, exchanging IC/STB/service
2. Transferring authorization data to CAS according to subscribers' order and charge
3. Managing charge from bank automatically

### 4. Statistic and query

### Main features

1. Supporting multi-level management with switch and route technology
2. Adapting complex network condition requirement
3. Based on database system, forming C/S or Web/server network configuration
4. Supporting Oracle, Sybase and SQL Server

### SMS Diagram



1. Environment management module: managing basic data needed by system operation, encoding, product information, department, person, function authorization, operation password and authorization.
2. Control management module: managing system environment, subscriber number generation rule, sales rule etc
3. Subscriber management module: managing subscriber installation/moving/adding or decreasing powders socket etc, changing, programs order/canceling, pausing/recovering, exchanging STB or IC card, transferring related data of digital subscriber to CAS
4. Query management module: supporting multi-mode query, and combining with operation of authorization for management of concentrated database and classification
5. Statistic report management module: supporting various statistic table/chart (subscribers distributing, order canceling, subscriber/STB/card time information etc)
6. Bank management module: managing charging/profit distribution, monitoring and analyzing the system with the interfaces of bank system