Product Catalogue for Mobile Network Solutions
Looking for a mobile solutions provider with world class experience and expertise?

From the arctic to the equator, from capital cities to remote country areas, Huawei is successfully delivering total mobile solutions to more and more satisfied customers.

Currently, over 40 countries including China, Thailand, Russia and Tunisia are enjoying the high performance of Huawei's 2G/2.5G systems. And there are a lot more to come.

And no wonder. Huawei combines an intimate understanding of customer requirements with thorough research to create innovative total mobile solutions that operate superbly in virtually any environment.

And Huawei's service extends far beyond design and installation, to first class operational support as well. Huawei's network of 32 branches worldwide, offers a complete range of expert services from network planning, implementation and optimisation to customer training.

So if you're looking for a total mobile solutions provider with the right experience, expertise and attitude to help your network succeed, you don't need to look further than Huawei.

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In the wireless communication field, Huawei has developed high-performance and cost-effective 2G/3G solutions. Huawei’s mobile solutions include GSM, GPRS, UMTS, CDMA2000, CDMA WLL and Mobile Operator WLAN. With years of experiences in deploying total mobile solutions in over 40 countries, Huawei has the right expertise to provide for its customers the state-of-the-art mobile solutions with tremendous network value.
Huawei GSM system has been widely deployed in 30 countries. More than 20,000,000 subscribers around the world are now witnessing the reliability and stability of our equipment.

Huawei GPRS solution has been deployed in China, Russia, Thailand, etc. In Shandong Province of China, Huawei takes 80% of the market share of GPRS.

Huawei is the major supplier of WLAN equipment for China Mobile. This is the first and biggest commercial Mobile Operator WLAN system in the world.

More than 20 WCDMA pilot networks have been built in China, Russia and Malaysia.

Based on the most advanced technology, Huawei CDMA2000 solution supports both mobile and WLL networks. It has been deployed in about 20 countries, including China, Russia, Azerbaijan, Uzbekistan, Georgia, Belarus and Nigeria.
GSM/GPRS Products

GSM/GPRS BSS

Base Transceiver Station (BTS) Family
- Various output power for different coverage
- High receiving sensibility (-110 dBm/900MHz; -109 dBm/1800MHz)
- Enhanced Technologies:
  - Co-BCCH, 6-cell technology, dynamic HR/FR/EFR
- Enhanced Abis interface
  - Support 15:1 multiplexing
  - E1/T1, HDSL, optical, microwave & satellite transmission
  - Support chain, star, tree, loop, and mixed topologies

Packet Control Unit (PCU)
- Standalone PCU, access of multiple BSC
- Dynamic coding scheme
- Support CS-3 and CS-4
- Real-time PDCH and TCH dynamic conversion

Base Station Controller (BSC)
- Excellent compatibility on A interface
- Large capacity and high processing capability
- Convenient maintenance and optimization functions
- Support HR/FR/EFR, SDCCH dynamic allocation, Co-BCCH, Cell Broadcast, etc.
Mobile Switching Center/Visitor Location Register (MSC/VLR)
- High capability & high integration
- High reliability design
- Abundant trunk and signaling interfaces
- Powerful platform for services
- Excellent compatibility on A/MAP interfaces
- Future oriented design

Home Location Register/Authentication Center (HLR/AuC)
- High capability, modular design
- High reliability, internal/external redundancy
- Powerful data statistic and analysis functions
- Excellent compatibility
GSM/GPRS Solutions

Broader Coverage Solution

- Power Booster Unit (PBU) with 80W transmission power
- Enhanced Duplexer Unit (EDU) with low insertion loss
- High receiving sensitivity of -110dBm
- High performance tower mounted amplifier
- Concentric circles technology
- Extended cell technology

Satellite

BSC

BTS

Land

Sea

Common Coverage

35km Limitation of ETSI Specification

Super Distance Coverage up to 120km

Island
Flexible, Economical and Fast Deployment

- Broader coverage with larger output power and better receiving sensitivity
- All-weather outdoor design, adaptive to any environment
- All-in-one (transmission, power supply, shelter, temperature adjustor, etc.)
- No need of equipment room and other auxiliary facilities
- Embedded optical fiber transmission module
- Convenient transportation and fast implementation
- Support of satellite transmission

BTS3012A
HLR Redundancy Solution

- Support of 2G/3G, smooth CAMEL evolution
- 1+1 or N+1 redundancy, excellent compatibility, low cost, high reliability
- Modular structure, smooth expansion to 2 million dynamic subscribers or 20 million static subscribers
- Simple implementation, no negative influence on current network or future expansion
- Fast takeover of services when failure in HLR occurs
Who can turn your 3G dream into reality?

Huawei can.

With Huawei’s mature WCDMA end-to-end solution, 3G is no longer a dream, but a reality.

Huawei has already successfully deployed its WCDMA end-to-end solution in over 20 cities around the world. So successfully, in fact, that more and more operators are now placing their 3G confidence in Huawei.

But every triumph that Huawei enjoys in the 3G world is based on hard earned experience. After years of deploying 2G and 2.5G solutions in over 40 countries worldwide, Huawei understands exactly what it takes to provide 3G networks to the highest standards. No matter how complex, no matter how difficult, no matter how impossible things may seem.

Now Huawei has extended its achievements to provide diversified applications and profitable services on the peer ends of the mobile terminal and service platform. And newer services based on higher-speed data and win-win business modes are now being developed at Huawei’s Value China Open Lab, so that in the future, all our customers will come out on top.

So if you’re looking for a commercial WCDMA solution provider with the experience and vision to turn your 3G dreams into a profitable reality, it's time to talk to Huawei.

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**UMTS Products**

**UMTS UTRAN**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Features</th>
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</thead>
<tbody>
<tr>
<td><strong>Indoor Macro NodeB</strong></td>
<td>Compact design with height of 1.4 meters, flexible configuration from 1x1 to 3x4 or 6x2 (sector x carrier), T1, E1, STM-1 transmission, support IMA, CES and Fractional ATM, support 1,536 voice channels</td>
</tr>
<tr>
<td><strong>Outdoor Macro NodeB</strong></td>
<td>Flexible configuration from 1x1 to 3x2 (sector x carrier), T1, E1, STM-1 transmission, support IMA, CES and Fractional ATM, special cooling design for outdoor environment, support 768 voice channels</td>
</tr>
<tr>
<td><strong>Indoor/Outdoor Mini NodeB</strong></td>
<td>All-whether, all-in-one design, no equipment room needed, less auxiliary facilities, small size and light weight, easy installation, T1, E1, STM-1 transmission, support CES and Fractional ATM, support 64 voice channels</td>
</tr>
<tr>
<td><strong>Remote Radio Unit (RRU)</strong></td>
<td>Optical fiber transmission, flexible networking, share baseband and clock modules with host NodeB, adaptable to outdoor environment</td>
</tr>
<tr>
<td><strong>Radio Network Controller (RNC)</strong></td>
<td>Based on commercial ATM/IP platform, modular design, smooth expansion and upgrade, 51,200 equivalent voice channels, 1,000,000 equivalent voice subscribers, powerful service bearing capability, support 8 kinds of AMR voice, support transport sharing between 2G and 3G</td>
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**BTS3812**

**BTS3806A**

**BTS3802C**

**RRU**

**BSC6800**
UMTS Core Network (Circuit Switched Domain)

MSC Server
- Abundant services: CAMEL 3, LCS, lawful interception, USSD callback, H.324M, etc
- Smooth evolution to R5/R6
- Large capacity and high integration, 1.8 million subs with only 3 racks
- Smooth expansion with new cards or sub-racks
- Support dual homing networking, embedded SG functions
- Support both layered and non-layered network architecture
- Support simultaneous access of GSM BSS and UTRAN

Media Gateway (MGW)
- Unified media gateway for both mobile and fixed system
- Smooth evolution to R5/R6, reusing existing hardware
- Process capability up to 45,000 Erl
- High integration, smooth expansion with new cards or sub-racks
- Embedded SG functions
- Support dual homing features, network-level reliability ensured
- Support E1/T1, SDH/ATM/POS 155M, FE/GE
- Support H.324M, multiparty session, etc
- Embedded tone and announcement playback resources

Home Location Register/Authentication Center (HLR/AuC)
- Support GSM/GPRS/UMTS subscribers, capable of transferring authentication between triplets and quintets
- Modular design, large capacity of 2 million subs with only 2 racks
- Compact configuration with 1 rack
- High reliability, NE-based N+1 redundancy
- Abundant and complete functions for interface-tracing
- Powerful data statistic and analysis functions
UMTS Core Network (Packet Switched Domain)

**Serving GPRS Support Node (SGSN)**
- Support both UMTS and GPRS
- Standard interfaces, strictly comply with 3GPP and GPRS specifications
- Capacity up to 1 million subscribers
- Modular design, smooth expansion with new cards or sub-racks
- Compact configuration with 1 rack
- Guaranteed QoS: DiffServ QoS, MPLS, etc.
- Support E1/T1, ATM STM-1/STM-4, POS STM-1/STM-4, FE/GE
- Special functions: CAMEL 3, LCS, Lawful Interception, GTP Hardware Forwarding, 2M Signaling, IPSec, etc.

**Gateway GPRS Support Node (GGSN)**
- Support both UMTS and GPRS
- Standard interfaces, strictly comply with 3GPP and GPRS specifications
- Base on commercial IP platform
- 1 million subs with 1 rack
- Guaranteed QoS: DiffServ QoS, MPLS, etc.
- Support E1/T1, ATM STM-1/STM-4, POS STM-1/STM-4, FE/GE
- High security: embedded firewall, IPSec, etc.
- Comprehensive VPN functions: L2TP, IPSec, GRE, IP in IP, etc.
- Routing functions: static routing, RIP, OSPF, BGP, NAT, etc.

**Charging Gateway (CG)**
- Processing capability: 3,000 CDR per second
- High storage capacity for CDR
- High reliability design of 1+1 redundancy
UMTS Solutions

Series NodeB meeting various requirements of coverage, networking and environment
- BTS3812, indoor macro NodeB, for densely populated areas
- BTS3806A or BTS3802C, special design for outdoor areas
- Unique product of RRU (Remote Radio Unit) for fast and economical installation
- Indoor coverage solution with mini NodeB, RRU, power splitter and distributed antenna
- Multiple transmission interfaces: E1/T1, STM-1
UMTS Core Network

- Future-oriented design, smooth evolution to R5/R6
- Global applications in commercial mobile networks
- Unified authentication and accounting for both mobile and WLAN services
- HLR NE-based N+1 redundancy, ensuring the security of important subscription data and the continuity of service provision
- Abundant transmission interfaces: ATM/POS/SDH STM-1 / STM-4, FE, GE, E1/T1, etc.
Provide IP multimedia communication services, including PTT, PR&IM, and Rich Voice.

- Support 3G, GPRS, WLAN and fixed broadband network
- Provide enriched IP multimedia services from the ISV, based on the open service platform
UMTS TopEng 3G OSS

- Based on the architecture of standard NGOSS business process
- Customer-centralized solution, managing the whole lifecycle of customer’s experience in the value chain
- Facilitate multilayer interactive relationship between customer and network
- Take into account of key factors in the process of system optimization and integration
Thinking CDMA?

When it comes to a total CDMA solution, more and more operators are turning to Huawei - and with good reason.

Cost-effective
To reduce the investment of operators, Huawei provides a variety of solutions, including broad coverage technology, a BTS family that meets all application needs, and solutions for fast and economical deployment.

Future-oriented
Based on the most advanced platform, Huawei’s CDMA solution supports mixed configuration of 1X and 1xEV-DO in one single cabinet. Smooth evolution to 1xEV-DV is also guaranteed.

Massive applications
Huawei has successfully deployed CDMA total solutions in about 20 countries, including China, Russia and Belarus.

So if you are thinking about how to make your CDMA network a success, think first about Huawei.

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CDMA2000 Products

**CDMA2000 BSS**

### 6/12 Sector-carrier Indoor Marco BTS
- 20/50W output power enables wider coverage
- Support mixed plug of 1X & 1xEV-DO card
- Digital transceiver of high receiving sensitivity (-128 dBm)
- Abundant transmission interfaces: E1/T1/STM-1, microwave, satellite, xDSL

### 6 Sector-carriers Outdoor Macro BTS
- No need of equipment room, less auxiliary facilities
- 50W output power enables wider coverage
- Support mixed plug of 1X & 1xEV-DO card
- Digital transceiver of high receiving sensitivity (-128 dBm)
- Abundant transmission interfaces: E1/T1/STM-1, microwave, satellite, xDSL

### 1 Sector-carrier iSite Mini BTS
- All-weather, all-in-one design, no equipment room needed
- Small and light, easy installation
- 50W output power enables wider coverage
- Tolerate wide range of AC power fluctuation
- Abundant transmission interfaces: E1/T1/STM-1, microwave, satellite, xDSL

### 1 Sector-carrier Optical Distributed Unit (ODU)
- No GPS antenna needed
- Ideal substitution of RF repeater
- Site extension up to 70km from host BTS
- 3-stage cascade to get extension of 90km
**Base Station Controller (BSC)**
- Based on mature ATM/IP broadband switching platform
- Large capacity and high processing capability
- Modular design, smooth expansion
- Supporting satellite transmission

**Radio Access Controller (RAC) for WLL**
- Based on mature ATM broadband switching platform
- Large capacity and high processing capability
- Modular design, smooth expansion
- Support V5.2 interface

**Fixed Wireless Terminals**
- Two types: terminal & phone
- Multiple frequency bands: 450M/800MHz
- Support public phone function
- Support POTS, FAX, circuit / packet data service

**Handsets for CDMA450**
- A variety of handsets, from high-end to low-end
- 16-chord ring tone
- High speed data capabilities up to 153.6kbps
CDMA2000 NSS

Mobile Switching Center/Visitor Location Register (MSC/VLR)
- Large capability & high integration
- High reliability design
- Excellent compatibility on A/MAP interfaces
- Powerful platform for services
- Support multiple Signaling Point (SP) technology
- Built-in SDH interface reducing cabling

Home Location Register/Authentication Center (HLR/AC)
- Large capability, modular design
- High reliability, internal/external redundancy
- Powerful data statistic and analysis functions
- Excellent compatibility

Packet Data Service Node (PDSN)
- High reliability with redundant parts and hot-swapping
- Support on-line patching
- Powerful functions to guarantee QoS
- Fully support TCP/IP protocols
- Abundant transmission interfaces: GE, FE, E1, ATM155, STM-1/4
CDMA2000 Solutions

Economical and Quick Roll-out

Co-Site Construction with Other BTS

- BTS adopts high power amplifier and built-in high performance filter. It can share the same tower and equipment room with other kind of BTS, such as GSM/NMT/TDMA BTS.
- Fractional ATM transmission: BTS can Share E1 with other kind of BTS, such as GSM/NMT/TDMA BTS. It helps to enhance the efficiency of transmission and decrease integrated investment.

Outdoor All-in-one Mini BTS

- Mini BTS is small, light and easy to be installed on mast, cement pole or against wall. AC power supported, no equipment room needed, lower requirement on transmission.

Smooth Expansion

- BSS system has modular design, and can be expanded by adding corresponding cards. System has dynamical configuration function, and the expansion will not halt the services.
- iSite has the processing capability of 3 sector-carriers. If an O1 site need to be expanded due to the increasing traffic, the O1 site can be changed to S1/1/1 site by adding two ODUs.
CDMA2000 SOLUTIONS

CDMA Wireless Local Loop (WLL)

- End-to-end solution, including terminals and handsets
- Support 450M/800M/1900MHz frequency bands
- Both RAC-based and MSC-based solution
- Based on advanced CDMA2000 platform and architecture
- EV-DO ready, smooth evolution to EV-DV
- Support large capacity voice service and broadband data services

CDMA WLL Solution
CDMA2000 Wireless Value-added Network

- **Online Public Phone**
  - Support IC card or instant charging
  - Support charging rate download and remote monitor

- **Flexible WIN Services**
  - Support both target WIN and overlay WIN
  - Simple PPS without mobile IN equipment

- **Intelligent Public Phone**
  - Centralized Charging Management
  - Centralized authentication, avoiding fake or clone
  - Support both Prepaid and Postpaid based public phone
  - Real time charging fee enquiry

- **Unified Number**
  - One DN for multiple terminals
  - Multiple terminals ring at same time

- **Integrated Wide Area Centrex**
  - For enterprise users, flexible number and dialing scheme
  - Support both mobile and fixed phone subscribers
The best way to cover

As a wireless access system, Huawei’s CDMA WLL end-to-end solution is the best choice for your ambition of the Universal Service.

Whatever your requirement, Huawei always has a solution that suits you most. Huawei CDMA WLL system can be deployed in the 450M/800M/1900MHz bands. The BTS family and the Broader Coverage technology enable cost-effective wireless access. Both V5.2 and SS7 interfaces are provided to meet different needs of networking. A variety of handsets and fixed terminals caters to different tastes of your subscribers.

Based on the most advanced CDMA2000 technology and structure, Huawei CDMA WLL system provides large-capacity voice service and broadband data services. Smooth evolution to 1xEV-DV is also guaranteed.

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WLAN Products

**WA1006+ (for operator)**
- Standard: IEEE802.11b, 802.11b+
- Frequency: 2400~2483.5 MHz ISM
- Data Rates: 1M / 2M / 5.5M / 11M / 22M bps
- Coverage: 35m-100m (indoor); 100m~300m (outdoor)
- Encryption: 64-bit / 128-bit / 256-bit WEP
- Antenna: dual polarization antenna / 2dBi
- Power: PoE (Power over Ethernet) / -48V, DC / 48V/0.4A
- O&M: WEB, Telnet, SNMP, TFTP, Unified O&M with AC

**WA1005 (for operator)**
- Standard: IEEE 802.11b, 802.3, 802.3u, IEEE 802.3af
- Frequency: 2400~2483.5 MHz ISM
- Data Rates: 1M / 2M / 5.5M / 11M bps
- Coverage: 35m-100m (indoor); 120m~400m (outdoor)
- Encryption: 64-bit / 128-bit / 256-bit WEP; Dynamic Encryption
- Antenna: Directional antenna /13dBi; Omni antenna /2dBi
- Power: DC / 10V / 1.2A, PoE / -48V
- O&M: WEB, Telnet, SNMP, TFTP, Set IP Session, Unified O&M with AC

**WA1003 (for end-user)**
- Standard: IEEE 802.11, IEEE 802.11b
- Frequency: 2400~2483.5 MHz ISM
- Data Rates: 1M / 2M / 5.5M / 11M bps
- Coverage: 35m-100m (indoor); 100m~400m (outdoor)
- Encryption: 64-bit / 128-bit WEP
- Antenna: dual polarization antenna /2dBi
- Power: DC / 5V / 2A;
- O&M: WEB, Telnet, SNMP, TFTP, Set IP Session, Unified O&M with AC
WLAN Access Controller (AC)

- Enhanced functions
  - SIM, WEB and PPPoE authentication
  - User bandwidth control
  - QoS strategies for different priorities
  - Built-in DHCP/AAA/Portal Server
  - Forced Portal Service
  - nPnP
  - Controllable Multicast

- High security
  - IP-MAC-VLAN binding
  - Layer 2 separation
  - Protection of critical network resources

- Convenient network management
  - Control a number of peripheral equipment
  - Support CONSOLE, TELNET and SNMP
  - Online patching

WLAN Authentication Server (AS)

- Based on carrier-class CPCI platform, high reliability
- High processing capability of 200,000 online users
- Support OTP (One Time Password) and EAP-SIM authentication
- Modular design, smooth expansion
- Standard interfaces, good interoperability and smooth integration
- Unified authentication & accounting with mobile network equipment
- Inherit mobile network services
- System configuration based on license mode.
WLAN Solutions

WLAN Convergence with GPRS/WCDMA

- Unified billing & customer care
- Reuse of existing HLR for authentication and authorization
- Minimal impact upon existing infrastructure
- Support international roaming
- Provide mobile IN services

Convergence with GPRS/WCDMA

WLAN Convergence with CDMA2000

- Authentication and accounting for WLAN service are performed by AS.
- AS enables the subscriber to be identified via OTP (One Time Password).
WLAN One-Time Password (OTP)

- Request password via client software, WEB or short message
- Obtain password via short message
- Security ensured by using password only once
- Support 802.1x client mode / EAP-SIM authentication

WLAN Integrated Prepaid Service (PPS)

- WLAN service with prepaid SIM or voucher card
- AS directly connected with SCP
- Standard signaling interfaces between AS and SCP
- No influence to the existing SCP
- Charge by time or traffic
Product Catalogue
for Mobile
Network Solutions
Established in 1988, Huawei Technologies is a high-tech enterprise which specializes in research and development (R&D), production and marketing of communications equipment, providing customized network solutions for telecom carriers in optical, fixed, mobile and data communications networks. Huawei’s customers include China Telecom, China Mobile, China Netcom, China Unicom as well as Thai AIS, South Korea Telecom, SingTel, Hutchison Telecom, PCCW HKT, Telemar (Brazil), Rostelecom (Russia), etc.

Huawei’s products can be divided into the following categories: fixed network, mobile network, data communications and optical network --- ranging from switching, access network, optical transport, intelligent network, support network, GSM, GPRS, W-CDMA, cdma2000 1x, full series of routers and LAN switches, videoconferencing to other key telecom technology fields. Most important of all, Huawei products are based on its independently designed ASIC chips. Its ASIC designing capability is among the most advanced in this field worldwide. This allows Huawei to consider the needs of its customers from start to finish, from the chip to the network.

This experience is invaluable as Huawei expands its penetration into international markets, with its international revenues saw strong growth of 68%, reaching US$552 million in 2002 compared with US$328 million in 2001.

In order to support its global operations Huawei has set up 32 branch offices worldwide. Eight regional headquarters and a host of customer support and training centres have been established. Several research institutes including Dallas (USA), Bangalore (India), Stockholm (Sweden), Moscow (Russia), Beijing and Shanghai have been set up, and a joint venture in Russia is operating successfully. Huawei’s products are in application in over 40 countries, including Germany, Spain, Russia, Brazil, Thailand, Singapore, Egypt and South Korea.

Among Huawei’s 22,000 employees, 46% are engaged in R&D. Each year, Huawei invests no less than 10% of its sales revenue into R&D. To ensure a steady and sustainable growth and to sharpen the core competitive edge, Huawei emphasizes the importance to partner with leading global players in the industry on both product development and marketing. Huawei has been cooperating with Texas Instruments, Motorola, Microsoft, Intel, Sun Microsystems and others.

Since 1997, Towers Perrin, Hay Group, PwC and FhG have been acting as Huawei’s consultants on employee stock option plan, human resource management, financial management and quality control.