

YEMENMOBILE NEW SMSC Project

Project Components & Technical Specifications

Introduction

Yemen Mobile Company is developing towards the new advanced integration of multiple services and multiple networks. However service platforms built by most operators are still independent which leads to complicated networking facilities, redundant construction of the public parts of many platforms, expansion and technological update, and hence a waste of human resource. Yemen Mobile main target is to offer a new advanced SMC services for the end user, while keeping control on the global incoming revenues.

1 Project Component

Important Note: All the following project components, services and protocols are mandatory provided by software and hardware, and it will introduce in the technical and financial proposal.

1.1 System Component Required (Hardware/Software):

Hardware/Software	Requirement	Note
MO speed	2000 MPS	Hardware and software must be extendable to 5000MPS
MT speed	3000 MPS	Hardware and software must be extendable to 5000MPS
Buffer memory	4,000,000 SMS	Hardware and software must be extendable to 6,000,000 SMS
Service Processing Unit	The provided service processing unit and all SMC nodes must work in a load sharing mode and N+1 redundant per active site. The service processing unit shall be designed based on ATCA Blade Server architecture as the following:	
	CPU: 6 at least ,each one has 2.4 GHz at least	Blade servers CPU Quantity and their processing speed
	Disk storage: 30 million SMS/DAY for 2 years	For 24 months at least.
	DDR3 RDIMM: 48 GB at least	Blade server's memory
No. of interfaces	200 interfaces at least for connection accounts	
SMSC data base	must be based on Oracle11g and SuSE Linux	

Network Management System	Provides NM functions and connects to the existing upper layer network management system through SNMP (such as HP OVO or TTI). Performance monitoring & reporting management.	<ul style="list-style-type: none"> ▪ Include NMS Hardware & Software ▪ Software must include monitoring SMSC license by account level. ▪ Software must include monitoring all SMSC blade server memory and CPU. ▪ Software must include monitoring the SMS in the buffer. ▪ Software must include monitoring SMSC signaling unit traffic by E1 and also for Sigtran trunk.
MO/MT license types	The vendor must mention all kind of MO/MT license types	(Default license; Periodic license: MO: 3000 MPS, MT: 4000 MPS license; Temporary license: MO: 4000 MPS, MT: 5000 MPS license.
Reliability and Availability	Dual Redundancy included	providing 99.999 % high availability of the system
POWER supply system	power consumption for total load at full configuration	proposal for power supply system containing all components with technical specifications. power supply system should meet any future expansion required at full configuration.
Environment system Alarm	<ul style="list-style-type: none"> · Smoke alarm · Temperature alarm · Humidity alarm · Power supply alarm 	

1.2 Required Services & Functions:

Note: All services & functions must be mandatory Arabic / English language

Service	Requirement	Note
Anti Spamming	Anti Spamming and Anti Flooding	For Junk and Redundant SMS and blacklist
SMS Types	P2P, P2A, A2P	
Long Message	length is more than 140 character	(length is not limited in the SMC and depend on handset)
SM Storage –SM	Stores 4Million SM/Day for 2 years at	both Caller-based Service and

Warehouse	least	Callee-based Service
SM Forwarding	400k subscribers at least and expandable	Called-based Service
SM Copy	400k subscribers at least and expandable	Called/Calling-based Service
SM Firewall - Black list - White list - Key words	400k subscribers at least and expandable. - 100 numbers/user - 100 numbers/user - At least 30 Keywords filter need case insensitive for each user.	- Called-based Service for security purpose. - The address number - The address number - The user level keywords
SM Auto-Reply	300k subscribers at least and expandable	Called-based Service
SM Group Sending	300k subscribers at least and expandable	Caller-based Service sending by mobile and by web portal
SM Personal Signature	300k subscribers at least and expandable.	
E-mail GW Function	Send sms to an email account, whatsapp ...etc.	
Other Functions	<ul style="list-style-type: none"> - Subscriber Management Function - Basic Service Function - SMS priority Function - SMS Retry Function - SMS Query Function - SMS Buffer Function - Status Report Function - Validity Period Function - Reply Path Function - Prepaid Charge Service - Parameter Check Function - Number Update Function - SMS Destination Table Function - Bandwidth Saving Function - Alphanumeric LA Address Function - SP Management - Advanced SMS Trigger Function - SMSC Guard Function 	

1.3 Required Interfaces Protocols:

From	To	Required protocol Description
CBS ,CIN	SMSC	Diameter/SFTP/FTP/SMPP+ for charging
CRBT, VMS,MDSP,MSGW	SMSC	SMPP,SMPP3.3/3.4
Network Management System (NMS)	SMSC	SNMP V2/V3
Provisioning	SMSC	SOAP/SMPP+/ FTP
Signaling unit	SMSC	MAP, TCPIP
Huawei SMSC	SMSC	
MSC	Signaling unit	SS7 based on IP/SIGTRAN
OAM and customer care	SMSC	GUI/HTTP/Web portal/HTTPS

1.4 System configuration requirement :

Hardware configuration	Description of Various Functions
SMSC	<p>SMSC must handle various service logics, including MSC,SMS Anti-Spam, Supplementary Services, etc. In order to realize the dynamic dispatching function, various service processors are required to use unified storage.</p> <p>Supported by Blade server, UNIX server and PC server.</p> <p>Supported by the UNIX / Linux operating systems, it can run a variety of applications to fulfill the SMS service functions such as FDA, Buffer, retry and route.</p>
Interfaces	<p>Deploys interface modules that are inconvenient to participate in the scheduling in various services, such as SMPP modules, Radius modules in GW, and so on</p>
DB	<p>Providesunifiedservicedatabase,Allservice'sdatabases are concentrated deployment</p>
OMM	<p>Provides the O & M function of the system and the scheduling function of the service processing capability.</p>

Provisioning	Makes unified management and acceptance of user data and service data
Charging	Introduces CDR and provides the DCC charging interface for prepaid service
Log& Rpt	Provide unified logs and reports
Signaling Equipment	Provides signaling interface equipment of SMS
Hot Spare	When one service blade breaks down in the hardware, it is possible to select one from the standby blades and automatically load the related processing modules to replace the original blade
Storage Device	Provides unified storage. The storage data includes user data, system configuration data, service CDR, log, reports, and dedicated data required by various services, Various modules that need to use the unified storage to share the physical storage through optical switches
Anti Spamming and Anti Flooding	It filters junk and redundant SMS.
Supplementary Services	It offers supplementary services like forward, copy , signature, user portal etc
Report	Provides centralized Platform report system. It consists of the pre-statistics and the report modules.
SIGTRAN connectivity	can support SS7 for 2M signaling and support TDM No.7 protocol and Sigtran protocol to connect with core network over IP.
POWER supply system	power consumption for total load at full configuration, with his proposal for power supply system containing all components with technical specifications. power supply system should meet any future expansion required at full configuration.

1.5 Implementation Plan

Check section 9 (page 27)

1.6 Training Requirements

Check section 10 (page 30)

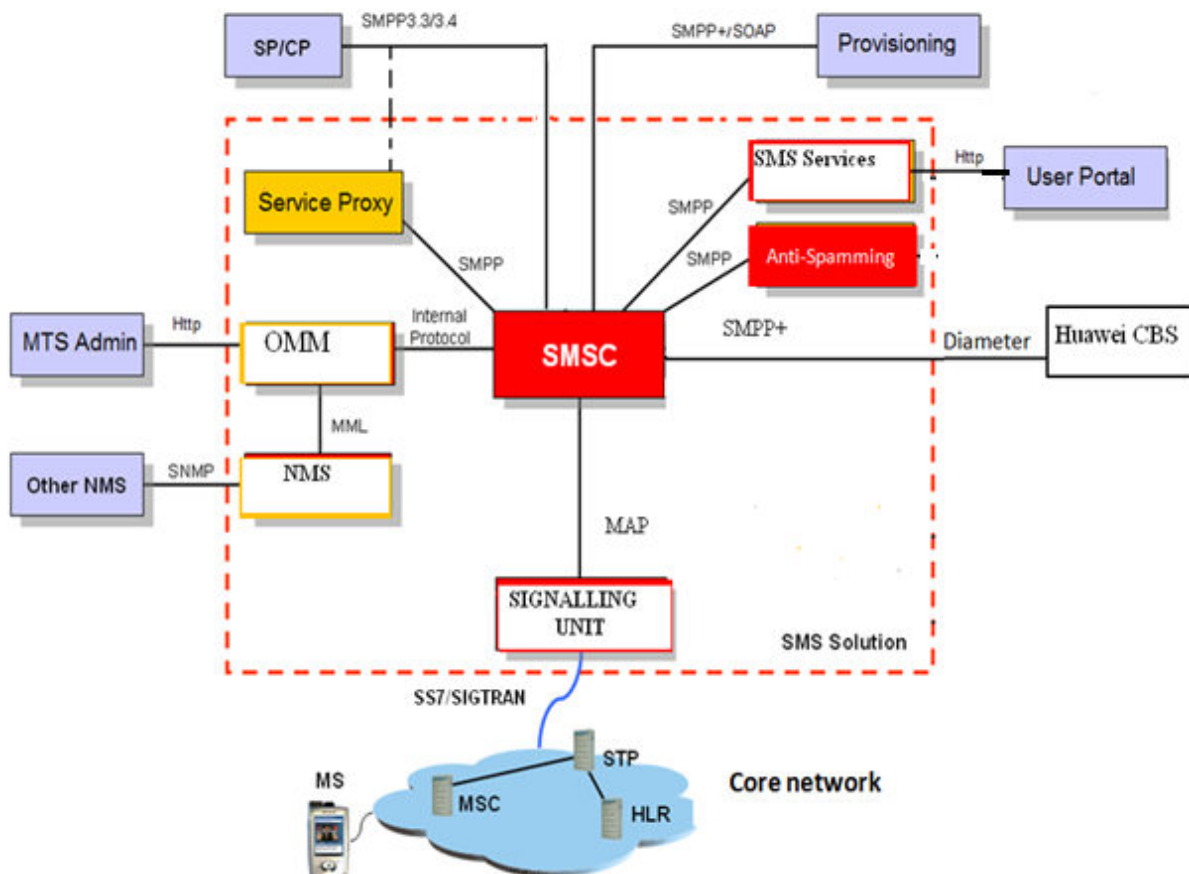
1.7 Operation & maintenance Requirements

- Spare parts list will be determined by Yemen Mobile later.
- Two set of tool kits.
- Check section 11 (page 31).

2 Architecture & Design – General Principles

The solution must comply with the following design and architecture requirements:

- The SMC online service activation and deactivation shall be flexible between each deployed services.
- The Uni-capability as the unified User Data, unified Log & Report, unified Charging, Unified User Portal, and Unified O&M shall be supported.
- Various services logic shall share common Service Process Unit with activated/deactivated status.
- The main process board in Unified Signaling Unit shall handle the signaling of different services and distribute to the related services.
- Population of new service data and modification of the product catalogue must be done on-line without any interruption of the system nor loss of revenues. Licenses must be clarified.
- Service software upgrades must be performed with smooth transition to the new releases with a possibility of rollback and without system interruption – maintaining 100% availability of tariff plans and no loss of revenues.



High Availability: the platform proposed must be proven with at minimum 99.999% Availability

SMSC must be a universal SMSC platform in all kinds of conditions, as shown below:

Firstly, it must handle GSM, CDMA, and SIP protocol in one set of SMSC. Operators only need one set of SMSC for multiple networks.

Secondly, The vendor must provide the processes & requirements to immigrate the new SMSC to other technology (GSM, UMTS, LTE,...etc).

Thirdly, SMC must work in the following 4 modes in the same time:

- Can be one traditional Store and Forward SMSC.
- Can be a FDA platform which make first deliver attempt and router the failed (temporary) SMSC to other SMSCs for later retry.
- Can be a SMS MO gateway which distribute SMS between legacy SMSCs, arrange whole network SMS traffic flexible.
- Can be a SMS router which can handle off-net SMS, provide whole SMS solution for the whole network.

2.1 Architecture features

The SMC target architecture features shall be built on the following nodes:

2.1.1 Service Processing Unit

- The proposed service processing unit shall perform the service processing Control of SMC.
- The provided service processing unit shall work in a load sharing mode and N+1 redundant per active site.
- The service processing unit shall be designed based on ATCA architecture or Blade Server architecture.

2.1.2 Data Storage Unit

The proposed user data storage unit shall perform the unified data storage for the SMC and SMC services.

The Data stored shall include user data, service log data, service & system report data, CDR data, and service & system configuration data, using oracle 11g data base.

Disk arrays (FC SAN) shall support two storage mechanisms: Raid 0+1 or Raid 5

2.1.3 Common Processing Units

- The Common Processing Units shall include management, Log & Rpt, Charging, UDB, User Portal and Signaling Interface modules.
- The proposed Common Processing Units shall perform the common processing Control for SMC.
- The provided Common Processing Units shall work in 1+1 redundant per active site.
- The Common Processing Units shall be designed based on the ATCA architecture or Blade Server architecture.

2.1.4 Signaling Interface Unit

The provided signaling interface unit shall concurrently support TDM No.7 protocol that include at least 25 E1's and Ethernet for SigTran protocol (for IP connection) to connect with core network over IP at least 10 directions.

The provided Signaling unit shall distribute service data to the related Service Processing Unit according to the predefined number segments, services etc.

2.1.5 Network Devices and Media Resource

- The switch shall have the Layer 3 switching functionality activated with Giga Ethernet ports.
- The router implements route interworking between a LAN and a public/private network is needed.
- The firewall shall be responsible for network security, address conversion, and other functions.

3 Traffic Requirement

The Traffic value of SMC is defined as follows, the detailed configuration shall be provided based as the following:

3.1 SMC Traffic Model Required

MO speed: 2000 MPS	Hardware and software must be extendable to 5000MPS
MT speed: 3000 MPS	Hardware and software must be extendable to 5000MPS
Buffer memory: 4,000,000 SMS	Hardware and software must be extendable to 6,000,000 SMS

- The vendor must mention all kinds of MO/MT license types as:
 - **Default license:** ordinary license used in non-holidays and in non-busy hours
 - **Periodic license:** MO speed: 3000 MPS , MT speed: 4000 MPS license used periodically in the specified time segments, such as holidays
 - **Temporary license:** MO speed: 4000 MPS , MT speed: 5000 MPS license used only once in the specified time segments, such as election and sport events.

- Software must include monitoring SMSC license by account level. (Also can add task in the report system).
- Software must include monitoring all SMSC blade server memory and CPU. (And can add task in the report system).
- Software must include monitoring the SMS in the buffer. (And can add task in the report system).
- Software must include monitoring SMSC signaling unit traffic by E1 and also for Sigtran trunk. (And can add task in the the signaling unit).
- Give details of the Oracle license and version of Oracle and SuSE Linux that is used in the SMC

3.2 SMC Data Storage & Management Required

Blade servers:

- Disk storage can save 30 million SM/DAY for 24 months at least.
- Blade server's memory (DDR3 RDIMM) must be 48 GB at least.
- Blade servers CPU Quantity must be 6 at least.
- Blade servers CPU must be 2.4 GHz at least.

Number of interfaces : Mandatory 200 interfaces at least.

System overload control mechanism

SMSC should manage the software license control. When traffic is higher than software license, SMSC should give the alarm information, and not block SMS traffic if it does not exceed the hardware capacity.

SM Storage –SM Warehouse - (both Caller-based Service and Callee-based Service)

Can store (4Milion SM/Day for 2 years at least)

SM Forwarding (Callee-based Service)

(400k subscribers at least) expandable

SM Copy (Callee/Calling-based Service)

(400k subscribers at least) expandable

SM Firewall (Callee-based Service)

(400k subscribers at least) expandable

- Black list: The address number in the black list must be 100 at least.
- White list: The address number in the white list must be 100 at least.
- Key words: The user level keywords must be more than 30 Keywords filter need case insensitive.

SM Auto-Reply (Callee-based Service)

(300k subscribers at least) expandable

SM Group Sending (Caller-based Service):

- Send group message by mobile, the maximum groups for each subscriber must be 10 groups. The maximum users in the group should be 30 users or more.

- Send group message by web portal. The maximum groups for each subscriber must be 10 groups. The maximum users in the group should be 100 users at least.

4 Service Functional Requirements

The proposed system must be an integrated multi-service platform covering the SMC service. The Bidder shall provide all features related to each service function, All the services below are mandatory:

4.1 SMS Anti-spam Service Functions

4.1.1 Introduction

Anti Spamming System (included in Ant spamming solution)

This module monitors the behavior and content of the message (Arabic/English letters) and then takes some specific actions according to the monitoring result. By analyzing SMS sending behaviors of calling parties and monitoring keywords in SMSes, Anti Spamming determines unauthorized and malicious calling parties who send SMSes in batches. Anti spamming then automatically handles the problem. This will reduce the load of the SMSC and preserve the interest of mobile operators.

- Sending behavior analysis

To track suspicious subscribers----conduct correlation analysis of the message sending process of one same number. This is to divide the seemingly complicated message monitoring process into several simple and easy-to-compute discrimination rules. By way of reasonable threshold setting and alarm upgrade mechanism, the system can accurately and effectively filter illegal information and bring it under control.

- Keyword analysis

To monitor the suspicious messages----conduct keyword search and full text match of the suspicious messages in order to filter illegal short messages.

4.1.2 The Anti-spamming features which must be included in the tender:

4.1.2.1 Monitor result display and processing Function

- Time Duration Rule Set Function
- Special Character Automatic Filtering Function
- Arabic letters and English Uppercase and Lowercase Letter Fuzzy Matching Function
- High Frequent Flow Monitoring Function.
- High Frequent Content Monitoring Function

- Monitoring Result Real-time Display
- Querying Monitoring Result
- Monitor Result Notified to BOSS
- Monitor Result Automatically Added to Black List
- Slip Window Statistics Function (traffic monitor)
- Behavior Analysis Function
- Content Monitoring Function
- Anti-Spoofing
- Anti-Faking

4.1.2.2 Black/White List

- Preposition White List Filtering
- Calling White List Filtering
- Called White List Filtering
- Calling Black List Interception

4.2 SM Storage –SM Warehouse - (both Caller-based Service and Callee-based Service)

4.2.1 Function Introduction

Along with the development of SMS, it is required by the users to store lots of interesting short message contents, while the storage of handsets is limited and cannot satisfy the user's requirement. It should provide SM Storage service to settle down such a problem.

SM Storage provides a large space for users to store individual short messages in network storage devices. The storage space can be configured and distributed by the operator. And the end users can query and download the stored short message content through the WEB Site.

4.2.2 Usage Mode

SM storage is both a caller and callee-based SMS.

4.2.3 Subscription Mode

Service subscription mode must be in 2 kinds:

- **SM Mode:** End users can subscribe or cancel SM Storage service by sending a short message to a particular access number. (Subscription or cancellation commands must be mandatory in Arabic/English letters)

- **Web Mode:** Maintenance personnel or users can customize SM storage service through the Web page provided by operators

4.2.4 Characteristic of SM Storage Service

SM storage service provides subscribers with a means of storing personal SMs with the help of network equipment. The system can store all the SMs sent and received by the subscriber at the network side. The subscriber can log in to the Web page at any time to view and download the stored SMs with his own password.

i. Uploading SMs by the subscriber: The subscriber uploads selected SMs to the SM Storage.

ii. Automatic storage by the system: The subscriber presets certain storage conditions. The system will automatically store SMs in the SM Storage when the subscriber sends or receives them.

Storage conditions include:

- All SMs sent
- All SMs received

iii. Classified storage: SMs sent, received, or uploaded by the subscriber will be automatically stored in their respective boxes, such as outbox, inbox and uploading box.

iv. SM query:

The subscriber can query SMs in the Storage. Query conditions include but are not limited to:

- By SM sender
- By SM receiver
- By time or date of sending/receiving SM
- By keyword

4.3 SM Forwarding (Called-based Service)

4.3.1 Function Introduction

SMS Forwarding means that a short message can be forwarded to another user. For example, if user B forwards its short message to user C, then when user A sends a short message to user B, the short message is received by user C, not user B. C can be a mobile number or an E-mail address. We only permit once forwarding. If user C also presets forwarding rule, this kind of multi-forwarding will be ignored, the SM will still be sent to user C. ASP supports the

unconditional or conditional forwarding function. This is a system setting. ASP supports time period forwarding: Within a specified time period, all SMS will be automatically forwarded to the predefined address. SM can be forwarded to Email or mobile number or both.

4.3.2 Subscription Mode

Service subscription mode must be in 2 kinds:

- End users can subscribe or cancel forwarding service by sending a short message to a particular access number. (Subscription or cancellation commands must be mandatory in Arabic/English letters)
- Maintenance personnel or users can customize forwarding service through the Web page provided by operators.

4.4 SM Copy (Called-based Service)

4.4.1 Function Introduction

SMS Copy service allows the mobile subscriber to keep a copy of the short message received in another mobile number or E-mail address. For example, if user A receives SM from other user, he/she can choose to keep a copy of this message in another address, which can be a mobile terminal or E-mail. If a user subscribes SMS Copy service, all short messages he/she received can be copied to the predefined address. SM can be forwarded to Email or mobile number or both.

4.4.2 Subscription Mode

Service subscription mode must be in 2 kinds:

- End users can subscribe or cancel SM copy service by sending a short message to a particular access number. (Subscription or cancellation commands must be mandatory in Arabic/English letters)
- Maintenance personnel or users can customize SM copy service through the Web page provided by operators.

4.5 SM Firewall (Called-based Service)

4.5.1 Filtering Mode

The subscriber should choose different filtering modes for SM Firewall service:

- Black list: The system will automatically filter all the messages from those mobile numbers in the black list. The maximum address number in the black list is 100.

- White list: Except short messages from those mobile numbers in white list, the system will filter all from others. The maximum address number in the white list is 100.
- Timing filtering: The user can predefine a time period, and in this specified time segment, SMS sent from other subscribers will be not received.
- Key words: The system scans the content of each SM, comparing content to each keyword configured before. If the SMS contains any keywords configured before, system will block the message. The maximum user level keywords are 30. Keywords filter need case insensitive.

4.5.2 Subscription Mode

Service subscription mode must be in 2 kinds:

- End users can subscribe or cancel SM Firewall service by sending a short message to a particular access number. (Subscription or cancellation commands must be mandatory in Arabic/English letters)
- Maintenance personnel or users can customize SM Firewall service through the Web page provided by operators.

4.6 SM Auto-Reply (Called-based Service)

4.6.1 Function Introduction

With SMS Auto-Reply service, the system automatically returns a preset message to the sender when the called terminal subscriber cannot reply the message, such as on a business trip, at a meeting, or on vacation. When subscriber A sends SM to subscriber B who activates the auto-reply function, subscriber A will receive an auto-reply SM that is pre-set by subscriber B. The auto-reply content must be edited by the subscriber and the maximum SM length is 140 Bytes(must be Arabic and English letters).

4.6.2 Subscription Mode

Service subscription mode must be in 2 kinds:

- End users can subscribe or cancel SM Auto-Reply service by sending a short message to a particular access number. (Subscription or cancellation commands must be mandatory in Arabic/English letters)
- Maintenance personnel or users can customize Auto-Reply service through the Web page provided by operators.

4.7 SM Group Sending by mobile and by web (Caller-based Service)

4.7.1 Function Introduction

SM Group Sending means that subscriber can send short message to a group of other users. For example, subscriber MS1 subscribes SM Group sending service. MS1 can define group 1 and add several users to group 1. Then subscriber MS1 can send a short message to group 1. IT provides subscriber use group sending function in two ways. One is send group message by mobile, and the other way is by web portal.

The maximum groups for each subscriber must be more than 10. The maximum users in the group should be 30 users or more for mobile sending and 100 users for web sending.

Subscriber can edit his group information via portal.

4.7.2 Subscription Mode

Service subscription mode must be in 2 kinds:

- End users can subscribe or cancel SM Group Sending service by sending a short message to a particular access number. (Subscription or cancellation commands must be mandatory in Arabic/English letters)
- Maintenance personnel or users can customize WEB SM Group Sending service through the Web page provided by operators.

4.8 E-mail GW Function

4.8.1 Function Introduction

Inter-working between Terminal and E-mail the SMSC can provide some E-mail function. The mobile subscribers can edit a short message and send it to an email account. When a mobile subscriber edits a short message in the format of yemenmobile@hotmail.com and sends it to e-service will send the content via SMTP to the related email address.

4.9 Bulk SM Function

4.9.1 Function Introduction

By Cooperating with the BSMSP (Bulk Short Message Sending Platform), SMSC can provide Bulk SM Sending Function to all subscribers of the SMSC, nation-wide subscribers, subscribers of a certain network segment, subscribers of a certain region, or subscribers defined by the operator (provided with a document or multi documents can be sent in the same times). The operator can also send bulk message via Web Site form any prefix or name has set. And bulk

SMS software must show the on-line number of successful sms sent also must control the number of SMS in the Bulk SMS. (eg.: send 200K out of 1M by sequence or random)

4.10 SM Personal Signature (Caller-based Service)

4.10.1 Function Introduction

The current SMS uniformly displays the caller name through the number directory in the mobile terminals. If the caller does not save the caller number in his/her mobile terminal and cannot remember the caller number, he/she cannot identify the sender of this SM. Especially, in holidays, like Spring Festival, New Year's Day and Christmas Day, subscribers are subject to enormous short messages of this type, because we tend to present greetings through SM now. Therefore, the vendor should put forward the SM signature service to solve the above embarrassed situation.

4.10.2 Subscription Mode

Service subscription mode must be in 2 kinds:

- End users can subscribe or cancel signature service by sending a short message to a particular access number. (Subscription or cancellation commands must be mandatory in Arabic/English letters)
- Maintenance personnel or users can customize signature service through the Web page provided by operators.

4.11 Billing Function

Charging for ASP service includes basic SMS fee, and function fee. Basic SMS fee will be done in SMSC. Function fee has two type, pay per use and pay by period.

1. Pay per use

The subscriber can choose to be charged by each usage of ASP service. In order to implement this feature, ASP can set special service identification when sending SMS to SMSC. SMSC should put it into the CDR and PPS message.

2. Pay by period

The subscriber can choose to be charged by period, such as daily, weekly, monthly. Pay by period should be done by provisioning and billing system. Provisioning system provide subscription information to billing system, and billing system charge according to subscription information.

5 Operation & Maintenance and Interface Requirement

5.1 General requirement

The Bidder shall provide all information related to:

- O&M Centre
- Alarm and Network Management Modules

5.2 O&M Centre

5.2.1 O&M Centre Management

The OMC shall provide Portal O&M of a full B/S architecture.

The OMC shall allow fault management, performance monitoring, configuration management, load management, security management, user management, system management, log management, report management, CPU monitoring, memory monitoring, buffer /FDB/FDA monitoring ,license /speed by account level monitoring, and O&M tools.

The OMC shall include at least three parts: Support Layer, Service Layer or Framework Layer, Application Layer.

The OMC shall include scheduling strategies management (retry profiles) based on error code, timing, prefix, short code, network error, submission interface, subscriber, and HLR notification ...etc.

The OMC shall include query sms content, origination address, distinction address, origination account ,destination address, sms time ,error code,.....etc for a specific time and days.(for a period more at least 6 months)

SMC must include the standard error code for CDMA ,GSM and SMPP for the succeed and failure SMS

The SMC interfaces must provide controlling mechanism like (maximum speed, maximum submit SMS limit, origination address, destination address... etc.) for each

interface.

The Proposed Payment system must support SNMP traps mechanism in order to be integrated with TMN solution.

5.2.2 Performance and Fault Management

The administration interface shall show the status of each part of the System:

- running
- stopped
- failed
- overloaded (in case of insufficient resources)

Alarms on the different components.

The supplier shall provide a solution to supervise and administrate remotely the System.

The Tender should describe the interfaces that are available for Monitoring of the System from operator's OSS.

5.2.3 Configuration and Other Management tools

Allow globe service configuration such as the number segment configuration, SP configuration, and Interface Message Processor (IMP) global configuration through the unified NMS and O&M system and it update the whole network elements.

Allow basic service configuration such as public data configuration and private configuration configure through one operation and tasks for all service modules as follows:

- User number segments
- System-level black and white lists
- Globe Title info etc
- Allow to perform declaration, deletion and update list operations for different services activated/deactivated at any time of the day without affecting the real traffic and in a minimum amount of time.
- Generate comprehensive logs for each performed task
- Allow the schedule of task to be run at a certain time of a day
- Task should be performed both via a GUI (Graphical User Interface) and BI (Batch Interface)

5.2.4 Backup & Recovery Solution

A reliable solution for storage and backing up of data (user data, and configurations) including data recovery for the Node after system error/failure.

The Tender should describe the own backup solution.

5.2.5 High availability and Redundancy

The requirements in terms of redundancy are listed below:

- Redundant components in all servers: CPUs, RAMs, Ethernet cards...etc.
- All databases should work in clustered mode (2N), where the backup node automatically takes over when the active one fails.
- Traffic is load shared on main process units.

The Tender shall specify which are the main performance characteristics and describe the KPI's to measure the performance of the system.

The Tender shall specify the values for the system availability KPI's:

- Availability
- Mean time between failures per module.
- Mean time to repair per module.
- No part of the system shall be a single point of failure.

Tender shall elaborate on how the solution handles peak traffic bursts (overload on call setup requests), for instance New Years Eve and Holiday of Eid. Preferred method is to drop the latest incoming call-setups to the system maximum.

5.3 Alarm and Network Management Modules

All the service modules can connect to monitoring and management system through SNMP and report alarms (I2000) and performance data to it, then monitoring and management system can report SMC data to the upper-level NMS through an SNMP or CORBA interface.

Topology and View Management shall be supported in monitoring and management system through network topology status monitoring, view management, Please describe the

detailed topology and view management modes.

The distributed hierarchical structure based on B/S shall be supported for unified alarms modules.

Alarm module shall be made up of collection layer, application layer and presentation layer. The application layer falls into alarm analysis, alarm query, alarm collection, alarm processing, alarm statistics, alarm reports, alarm configuration, and fault bills. Modules in Presentation layer can be customized according to users' operation habits.

Alarm information processing shall support information filtering, alarm confirmation, alarm clearance, alarm notification, alarm synchronization, alarm re-definition, and alarm processing Module functions

A friendly alarm information query interface and combined querying conditions shall be complied shall be supported. And the history information shall be queried.

Statistics results shall be displayed with tables and graphs, and shall be printed. Information statistics classified by module, type, etc are given in reports (period, times, etc).

Alarm management system shall conduct dependency analysis of received alarm information and then conducts location and diagnosis of faults that have occurred in the system, assisting users with troubleshooting and reducing impacts of system faults on the operation quality of the whole network.

Alarm setting shall be flexible and displayed in a visual way. The multiple alarm modes such as host visual & audio alarm prompt, alarm box prompt, email releasing, handset short message sending (releasing), etc shall be chosen by the users.

Fault bill generation mechanism shall be supported, please describe the detailed info.

6 Portal Requirement

6.1 OMM/USM Portal

The proposed system should provide a OMM/USM portal based on Web to display

O&M functions, which will provide the global view on the full system.

The OMM/USM portal should provide the following system functions: the rights management, equipment management, performance measurement, fault management, configuration management, operation log management, system report module, command line interface, and O&M tools.

The OMM/USM portal should provide the following services functions: the central service dispatch mechanism, combined key words query, backward number query function, knowledge base function, associated query and right- and-region based function.

The proposed system should provide a service log & report portal based on Web.

The user can log in to the service log & report portal by a user name plus a password through the unified entrance provided by the portal.

Through the portal, operators can view the following report: system performance report, service operation analysis report and Network operation analysis report. Operators can view the following log: system user operation log, and subscriber service log.

7 Log & Report Requirement

7.1 Log Function

The proposed solution must provide the log function to manage distributed sub-service log entity, which shall furnish entire-flow tracking of service session log, Service-oriented massive log analysis and retrieval and intelligent log data storage policy.

The log function must have good reliability, security, flexibility, and scalability and can meet varying requirements on service log statistics characteristics and capacity.

The log function must adopt mature B/S architecture and Web access mode with friendly human-machine interface accessed, which shall be convenient to operate and has visual displays and outputs.

The log function must provide unified management mode, unified topology, unified panel style and unified O&M interfaces.

The log function shall encapsulate the unified interfaces to various service enablers for collecting each service log and format conversion.

The log function shall provide unified database importing management for converted information centralized database importing and operations.

The log function shall provide strong data analysis capability through efficient data retrieval technique to implement deep data mining and real-time monitoring on service quality.

The log retrieval should support combined key words query and return query results in real time.

The log retrieval should support backward number query and return the caller/callee number list according to a specific error code or an important characteristics.

The log retrieval should support the knowledge base function and return the possible causes

of the fault and prompts of solutions in the query result.

The log retrieval should support associated query and return service logs of SMS-Antispam simultaneously for a certain sub-service query based on one handset number.

The log retrieval should support the right- and-region based function.

7.2 Report Function

The proposed solution must provide the report function to collect distributed sub-service report data, which shall furnish Service-oriented massive data analysis and report and intelligent report data storage policy.

The report function must have good reliability, security, flexibility, and scalability and can meet varying requirements on service report statistics and analysis.

The report function must adopt mature B/S architecture and Web access mode with friendly human-machine interface accessed for report query and presence.

The report function shall provide unified database importing management and operations for statistics result tables and statistics procedures through incremental statistics of service log base CDRs and also can be based on sms database by error code, short code, originating account,.....etc

The report function should generate the following three type reports:

- Equipment performance report.
- Service operation analysis report.
- Network operation analysis report.

The Equipment performance report generated by the unified report function shall include: CPU occupancy report, Database table space report and Memory occupancy report.

The Service operation analysis report generated by the report function shall be based on each service and displayed by the operators' choice.

The Service operation analysis report generated by the report function shall also include the terminal statistical analysis report and the user statistics analysis report to conduct full-service statistical analysis and displays by terminal and user respectively.

The Network operation analysis report generated by the report function shall measure network conditions of various services for the operation.

8 Charging & Provisioning Requirement

8.1 Real Time Charging Function

The unified real time charging for SMS services must connect to Huawei CBS and must be compatible with the CBS connections charging protocols, refund CDR and future updates.

8.2 Unified Provisioning Function

The proposed system must provide a unified provisioning function for all service and encapsulates all external provisioning channels.

The proposed system must synchronize user service provisioning information by interacting with the BOSS/CBS through multiple protocol interfaces such as the WEB Service interface and the HTTP/XML interface.

The unified provisioning function must store the receiving provisioning information from various external and internal provisioning channels in the unified user database by interacting with the unified data management function, and then return the provisioning results to users.

The unified provisioning function shall link to the service processing modules to synchronize the user information of automatic provisioning for some services allow automatic provisioning.

9 Implementation Requirements

This part of the document shall address the Implementation and Project Management requirements and responsibilities for both the Operator and the Tender, deemed essential towards the successful implementation of the Operator's Platform.

9.1 Site specifications

Hardware layout should be provided by Tender. Length, width, depth, height and square meters used should be given. The space needed above the system for height should be given. Hardware weight shall be provided by Tender.

POWER supply system

The Tender should submit his offer including power consumption for new SMSC and total load at full configuration containing all components in the technical specifications, providing the recommended power requirements; this will include peak and normal operation. Tender will also include grounding requirements and locations of power distribution cabinets in the floor plan. Redundancy power supply is mandatory. Power input: -48 VDC is preferred by the operator.

Also power supply system should meet any future expansion required at full configuration.

Environmental limits to be provided by Tender. This includes relative humidity and temperature needed, and the platform BTU heat generation.

Auxiliary equipment should be provided by Tender. This includes needed access terminals. Tender shall provide the total space needed for the equipment and control equipment (rack mountable console, monitors, etc.) and description of each hardware module.

Detailed technical design, defining the detailed specifications for the solution to be delivered and integrated in the Operator's network.

Implementation phase comprises the execution of the planned equipment deliveries, installation, integration, commissioning and pre-acceptance Platform integration.

Acceptance phase comprises the acceptance testing of individual Platform nodes, as well as of the end-to-end Platform proving (including interconnection and interworking tests to other Platforms).

9.2 Implementation Phase

The Tender shall provide the Operator Contract Liaison with detailed Implementation Plans for each of the major Platform components included in Tender's proposed solution.

The Delivery-Installation-Commissioning sequence shall be shown clearly on each of resourced Implementation Plans and the overall degree of overlapping activities indicated on a Master Implementation Schedule.

A provisional Master Implementation Plan shall be submitted by the Tender as part of its response.

Acceptance Phase

Taking into account the Test and Acceptance Plan requirements and the Platform Specification, as given elsewhere in this document, the Tender shall submit as part of its response an Acceptance Time Schedule for Platform implementation and services.

Cutover Phase

The Cut-over process should be shown clearly in the Tender proposal including the roll-back plan to current system.

9.3 Operator-Tender Interface

The Tender shall discharge its contractual obligations in close co-operation with the Operator. To facilitate this process, the Tender–Operator interface shall operate over 4 levels, as described below, which, nevertheless, may be (partially) combined in practice.

This function shall be led by the Tender-appointed Project Manager, whose counterpart number shall be the Operator/Project Director.

These two top Project responsibilities shall decide on the extent of participation by other managerial/financial/engineering staff from both organizations, including sub-Tenders, as particular instances/Contract Stages require.

The key objective of this body is to formally monitor and direct the Project by convening on a weekly basis [Contract Progress Meeting], in order to:

- Confirm and adjust Contract progress against the Master Project Plan Milestones;
- Resolve formally any Contract execution problems as they arise;
- Decide on Contract amendments at the request of either party;
- Arbitrate on any unresolved System Design/Implementation/Acceptance issues, and Confirm due payment, following Milestone achievement/successful Acceptance.
- **Design Authority**

This joint technical function shall be co-chaired by senior Technical Managers, one each appointed by the Operator and Tender. The composition of this body, which shall meet on an ad-hoc basis as required, shall include relevant VAS/Radio/ /Transmission etc., Planning and Design staff from both parties, including sub-Tenders. The objectives shall be to:

- Hold Design Review Meetings, to ensure proper and complete detail technical design;
- Provide the Project with solutions to any System Design/Planning issues, as arising;
- Prepare case(s) for arbitration by Contract Liaison function, in case of disagreement;
- Prepare priced proposal(s) for Contract amendment by Contract Liaison, if required;
- Look ahead into Design issues of the next Stage(s), as applicable, and Support the Contract Liaison on and Implementation Authority.

10 Training Requirement

The training course must focus on the following Objectives (for 9 persons):

On completion of this program, the participants will be able to:

- Understanding basic theory.
- Understanding the system structure.
- Master the service flow.
- Master the service data configuration.
- Master the operation on SMSC O&M.
- Master the operation on Anti-spam Service O&M.
- Master the operation on SMSC features O&M.
- Master the capability for handling most of the problems.
- Know the evolution, benefits and location in network of signaling unit.
- Understand the typical architecture, interfaces and networking of signaling unit.
- Describe the functions, features, applications and specifications of signaling unit.
- Describe the hardware structure and functional boards of signaling unit.
- Understand the structure of signaling unit related protocols like SS7 and SIGTRAN.
- Explain the signaling unit software structure including working principles, directories and Processes.
- Manage the system administrator, operators, users and their authorities.
- Implement the system data configuration and routine operations.
- Know how to check alarms and handle alarms.
- Perform the routine maintenance tasks like monitoring the system running status and services by using commands or tools.

11 Operation and maintenance Support Service Requirement

The vendor must offer (24 months) warranty period and Operation and maintenance as follow:

Technical Support Service	Help Desk
	Telephone Support
	Remote Access
	On-site Troubleshooting
	Emergency Recovery
Software Support Service	Software Diagnosis and Correction
	Software Update
	First Node Implementation
Hardware Support Service	Repair and Return
Knowledge Database Service	Knowledge Database Service
Outsourced Products Service	Outsourced Products Service
Inspection Service	Inspection Service

Annex 1

The Key Items for Evaluation of New SMSC System:

All the requirement tables that mentioned in project components (1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7) must be achieved and the following key items.

1	<u>SMSC must be a universal SMSC platform in all kinds of conditions, as the following:</u>		
	SMC must handle CDMA, GSM ,LTE and SIP protocol in one set of SMSC.		
	SMC must work in the following 4 modes in the same time:		
	- Can be one traditional Store and Forward SMSC.		
	- Can be FDA platforms.		
	- Can be a SMS MO gateway which distribute SMS between legacy SMSCs.		
2	License:		
	MO speed: 2000 MPS Hardware and software must be extendable to 5000MPS		
	MT speed: 3000 MPS Hardware and software must be extendable to 5000MPS		
	Buffer memory: 4,000,000 SMS Hardware and software must be extendable to 6,000,000 SMS.		
	Number of interfaces: Mandatory 200 interfaces at least for connection accounts.		
	The vendor must mention all kind of MO/MT license types as: - Default license - Periodic license - Temporary license.		
	System overload control mechanism - SMSC should manage the software license control. When traffic is higher than software License, SMSC should give the alarm information, and not block SMS traffic if it does not Exceed the hardware capacity.		
	- SMC and SMS Services must be in Arabic/English language (Unicode), and must include Long SMS and binary messages.		
3	Monitoring and Network Management and report		
	▪ Include NMS Hardware & Software		
	▪ Software must include monitoring SMSC license by account level.		
	▪ Software must include monitoring all SMSC blade server memory and CPU.		
	▪ Software must include monitoring the SMS in the buffer		

	<ul style="list-style-type: none"> Software must include monitoring SMSC signaling unit traffic by E1 and also for Sigtran trunk. 		
4	<p>Service Processing Unit</p> <ul style="list-style-type: none"> The provided service processing unit and all SMC nodes must work in a load sharing mode and N+1 redundant per active site. <p>The service processing unit shall be designed based on ATCA architecture or Blade Server architecture as the following:</p> <ul style="list-style-type: none"> Blade server's memory (DDR3 RDIMM) must be 48 GB at least. Blade servers CPU Quantity must be 6 at least. Blade servers CPU must be 2.4 GHz at least. 		
5	<p>Data Storage Unit</p> <p>The SMSC data base must be Oracle11g based on and SuSE Linux .</p> <p>Disk arrays (FC SAN) shall support two storage mechanisms: Raid 0+1 or Raid 5</p> <p>Disk storage must save 30 million SMS/DAY for 24 months at least.</p>		
6	<p>Signaling Interface Unit</p> <p>Include Signaling Unit equipments with software.</p> <p>Signaling Unit include at least 25 E1's and Ethernet for Sigtran protocol (for IP connection) to connect with core network at least 10 directions.</p>		
7	<p>Network Devices and Media Resource</p> <ul style="list-style-type: none"> The switch shall have the Layer 3 switching functionality activated with Giga Ethernet ports. The router implements route interworking between a LAN and a public/private network is needed. The firewall shall be responsible for network security, address conversion, and other functions. 		
8	<p>Portal and Reports system</p> <ul style="list-style-type: none"> OMM/USM portal based on Web to display O&M functions. (provide global view on the full system) Provide service log & report portal based on Web. Report system include system performance Report system include service operation analysis report Report system include network operation analysis report Operators can view system user operation log. Operators can view subscriber service log. 		

9	Charging & Provisioning		
	- Real time charging function		
	- Unified Provisioning function		
	- The unified real time charging for SMS services must be able to connect to Huawei CBS, and must be able to connect to existing Huawei equipments: MSC, SMC, CBS, HLR, CRBT, VMS, MMS, WAP, NMS, MDSP, SMSGW (connect to the existing elements through SMPP and SMPP+ or any other protocols and must be compatible with CBS protocols connections, CBS functions like (on line CDR for deduct money, CDR failed for refund.....)		
10	Services Functional Requirements:		
	A - SM Storage –SM Warehouse - (Called/Calling-based Service) must store (4Milion SM/Day for 2 years at least)		
	B - SM Forwarding (Called-based Service) (400k subscribers at least) expandable		
	C- SM Copy (Called/Calling-based Service) (400k subscribers at least) expandable		
	D- SM Firewall (Called-based Service) (400k subscribers at least) expandable		
	- Black list: The address number in the black list must be 100 at least.		
	- White list: The address number in the white list must be 100 at least.		
	- Key words: The user level keywords must be more than 30 Keywords .		
	E - SM Auto-Reply (Called-based Service) (300k subscribers at least) expandable		
	F - SM Group Sending by mobile and by web portal. (Caller-based Service):		
	- Send group message by mobile, sending to 10 groups with 30 user in each group.		
	- Send group message by web portal. sending to 10 groups with 100 user in each group.		

	<p>G- SM Personal Signature (Caller-based Service) it must be in Arabic/English letters</p>		
	<p>Subscription Mode Services (a,b,c,d,e,f,g)subscription mode must be in 2 kinds: (The vendor must give details for the flow of SMS services.)</p>		
	<p>- SMS Mode: End users can subscribe or cancel SM Storage service by sending a short message to a particular access number. (Subscription or cancellation commands must be mandatory in Arabic/English letters)</p>		
	<p>- Web Mode: Maintenance personnel or users can customize SM storage service through the Web page provided by operators</p>		
	<p>H - E-mail GW Function - The mobile subscribers can send sms to an email account or whatsapp.</p>		
	<p>I - Bulk SM Function - SMSC must provide Bulk SM Sending Function to all subscribers of the SMSC, nation-wide subscribers, subscribers of a certain network segment, subscribers of a certain region, or subscribers defined by the operator (provided with a document or multi documents can be sent in the same times).</p>		
	<p>- The operator can also send bulk message via Web Site form any prefix or name has set.</p>		
	<p>- The Bulk SMS software must show the on-line number of successful sms sent also must control the number of SMS in the Bulk SMS. (eg.: send 200K out of 1M by sequence or random)</p>		
11	<p>SMS Anti-spam Service Functions: The Anti-spamming features and processing Function which must be included in the tender:</p>		
	<ul style="list-style-type: none"> • Time Duration Rule Set Function 		
	<ul style="list-style-type: none"> • Special Character Automatic Filtering Function 		
	<ul style="list-style-type: none"> • Arabic letters and English Uppercase and Lowercase Letter Fuzzy Matching Function 		
	<ul style="list-style-type: none"> • High Frequent Flow Monitoring Function. 		
	<ul style="list-style-type: none"> • High Frequent Content Monitoring Function 		

	<ul style="list-style-type: none"> Monitoring Result Real-time Display 		
	<ul style="list-style-type: none"> Querying Monitoring Result 		
	<ul style="list-style-type: none"> Monitor Result Notified to BOSS 		
	<ul style="list-style-type: none"> Monitor Result Automatically Added to Black List 		
	<ul style="list-style-type: none"> Slip Window Statistics Function (traffic monitor) 		
	<ul style="list-style-type: none"> Behavior Analysis Function 		
	<ul style="list-style-type: none"> Content Monitoring Function 		
	<ul style="list-style-type: none"> Anti-Spoofing 		
	<ul style="list-style-type: none"> Anti-Faking 		
	Black/White List		
	<ul style="list-style-type: none"> Preposition White List Filtering 		
	<ul style="list-style-type: none"> Calling White List Filtering 		
	<ul style="list-style-type: none"> Called White List Filtering 		
	<ul style="list-style-type: none"> Calling Black List Interception 		
	<p>Operation & Maintenance and Interface Requirement</p> <p>1-The OMC must allow fault management, performance monitoring, configuration management, load management, security management, user management, system management, log management, report management, CPU monitoring, memory monitoring, buffer /FDB/FDA monitoring ,license /speed by account level monitoring, and O&M tools.</p>		
	<p>The OMC shall include scheduling strategies management (retry profiles) based on error code, timing, prefix, short code, network error, submission interface, subscriber, and HLR notification ...etc.</p>		
	<p>2-The OMC must include query sms content, origination address, distinction address, origination account ,destination address, sms time ,error code,.....etc for a specific time and days.(for a period more at least 6 months)</p>		
	<p>3-SMC must include the standard error code for CDMA ,GSM and SMPP for the succeed and failure SMS</p>		
	<p>4-The SMC interfaces must provide controlling mechanism like (maximum speed, maximum submit SMS limit, origination address, destination address... etc.) for each interface.</p>		
13	<p>Report Function</p> <p>1-The proposed solution must provide the report</p>		

	function to collect distributed sub-service report data, which shall furnish Service-oriented massive data analysis and report and intelligent report data storage policy.		
	2-The report function shall provide unified database importing management and operations for statistics result tables and statistics procedures through incremental statistics of service log base CDRs and also can based on sms database by error code ,short code ,originating account,.....etc		
	3-The report function should generate the following three type reports:		
	- Equipment performance report.		
	- Service operation analysis report.		
	- Network operation analysis report.		
14	Immigration to other technology The vendor must provide the processes & requirements to immigrate the new SMSC to other technology (GSM, UMTS, LTE,...etc).		
15	Training Requirement The training course must cover all SMSC , Anti-spam Service and SMC features Objectives (for 9 person):		
16	Operation and maintenance Support Service Requirement The vendor must offer (24 months) warranty period and Operation and maintenance.		