**PART II - SUPPLY REQUIREMENTs**

**CHAPTER 5 - TECHNICAL REQUIREMENT**

Bidder has to fully comply with each of the following items. The bid document will be dismissed if any of the items is NC

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| **Article** | **Requirements** | **Compliance** | **Comments** |
| **INSTRUCTIONS** | |  |  |
| 1.1 | This Chapter specifies project requirements and system technical specifications needed for a real-time charging system for post-paid subscriber that has a capacity of 2.000K (2M) where 2M active post-paid subscribers working on Vinaphone network.  PPS-IN is also expanded for Diameter rating and charging of prepaid. The expansion of the system support:   * 840K Diameter concurrent sessions for real traffic and 120K concurrent sessions for redundancy. * 6720K sessions per hour. | FC | Please refer to Comverse technical proposal and system sizing documents for more information. |
| 1.2 | The system proposed will not include a Voucher Server and be connected with VinaPhone’s existing VS. | FC | Comverse will not include a voucher server. Elcom will responsible for integration to existing Comverse RTBS voucher server via the recharge proxy |
| 1.3 | Bidder has to provide a power supply system for the parts of the system using the AC power. The other parts, which run on -48VDC, use VinaPhone’s -48VDC. | FC | All Comverse equipment uses -48 VDC power supply |
| 1.4 | Bidder has to be responsible for integrating the offered system with VINAPHONE existing Vinaphone network. | FC | Please refer to Comverse technical proposal for more information. |
| 1.5 | Bidder must regard this Chapter as a request to design and submit proper and feasible tender to Vinaphone in order to fully comply with our requirement. | FC |  |
| 1.6 | Technical Requirements detailed in Chapter 7 for Scope of Supply must be considered the minimum and basic requirements for the requirement. The bid price, proposed in the Bidder's bid package, must be understood as to gain a full compliance to our requirement. | FC | Please Comverse’s response to the Chapter 7 – Technical specifications for more information. |
| 1.7 | The bidder must take responsibility for any features/functions that are described and listed in the price schedule but not ready for use. | FC |  |
| 1.8 | Bidder must quote for a full turn-key solution in which Bidder must be fully responsible for installation, commissioning, integration and project management. All of these requirements must be clearly shown in Bidder's quotation. | FC | Please refer to the Bill of Quantity for more information. |
| 1.9 | All necessary hardware, licensed software/features, accessories and related services, all installation materials and accessories such as DDF, cables, cable tray...etc required for installation/commissioning as a full turn-key basis of the offered system must be included in Bidder's Bidding Price and detailed in Bidder's Bill Of Quantity (BoQ). | FC | Please refer to the Bill of Quantity for more information. |
| 1.10 | In addition to the State of Compliance to VINAPHONE requirement in Chapter VII, Bidder has to state clearly the Scope of Works, System Design with proper calculation on dimensioning taking into account the input parameters that VINAPHONE give. | FC | Please refer to the Scope of Work, technical proposal and system sizing for more information. |
| 1.11 | Bidder have to carry out all the necessary site surveying (including: site survey, electrical survey, existing VINAPHONE network survey) in order to collect enough information to implement this project. During the preparation of the tender document, Vinaphone will assist in addressing the site and providing as much information as we can to the bidders. | FC |  |
| 1.12 | Bidder must show system description (hardware, software, features...) in details. | FC | Please refer to the Bill of Quantity for more information. |
| 1.13 | The system will all be installed and operated, 57A Huynh Thuc Khang, Hanoi, Vietnam. | FC |  |
| 1.14 | Items throughout this chapter must in writing be answered and explained clearly. Most of the items are evaluated with points Vinaphone give. The rest, which do not have points given, are instructions, general requirements, and the important requirements in order to be complied | FC |  |
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| **II** | **SCOPE OF SUPLLY REQUIREMENTS** | FC |  |
|  | The project is full turnkey basis. Bidder must take full responsibility for implementing project from the beginning to end that includes three major contents:  E - Engineering and Designing.  P - Procuring and Product Supplying.  C - Installation and Commissioning.  VINAPHONE requirements (covers all three contents) for equipment purchasing under this Bid are detailed here below. |  |  |
| **III** | **E – REQUIREMENT FOR ENGINEERING AND DESIGNING** |  |  |
| 3.1 | Tenderer’s Experience and the product proposed |  |  |
| 3.1.1 | **Reference list** | FC |  |
|  | - Tender documents shall include a reference list showing the proposal products that have been provided for GSM operators.  - The reference list shall have at least the items below:  • Name of Operator;  • Software Version / Release  • Capacity in Number of subscriber.  • Features, Services the system provides: Voice, SMS, GPRS, MMS, CAMELs, IMS, convergence, 2G/2,5G/3G network… |  | Please refer to the Comverse Billing reference for more information. |
| 3.1.2 | **Experience** |  |  |
|  | Tender shall submit at least one contract showing that from 01 July 2008 until now, the proposal system was provided to an operator having their core network system like VinaPhone’s. | FC |  |
| 3.1.3 | **Product roadmap and upgrade path** | FC |  |
|  | The proposed product shall fulfill the following criteria |  | Please refer to the roadmap document |
|  | * Product roadmap is planned for the next 2 years |  |  |
|  | * Product roadmap for multi-services (voice/data/transaction/e-commerce) convergence |  |  |
|  | * Product roadmap for pre/post paid convergence |  |  |
|  | * Product roadmap for full multi-line of businesses convergence |  |  |
|  | * Product roadmap for full OCS (Online Charging Server) |  |  |
| 3.2 | **For Pre-installation.** | FC |  |
|  | Bidder shall submit in the bid document the responsibility matrix for supply and installation between VinaPhone, the seller and the third partner (if needed). The possible installing documents that consist of Technical network drawing, floor plan, internal IP logic connection between nodes of new system, SS7 connection with GSM core, power supply drawing…, must be included in the bid document. Bidders are requested to provide detailed the implementation schedule, scope of work, responsibility matrix, and other necessary conditions for installation and testing of the proposal system |  | Please refer to the responsibility matrix for more information. |
| 3.3 | **Engineering Designing** |  |  |
| 3.3.1 | **Dimensioning and designing the system** | FC |  |
|  | Bidder must base on the requirement specified this part to design the system accordingly. The details of system design with dimensioning, configuration and module must be documented and submitted in the bid. The designing document for the system proposed in the bid must at least cover the following points:  -  System processing capability for each node (clearly in BHCA, Erlang, and Subscribers).  -  Number of ports IP, IP through put, E1 trunk, SS7 links….provided and licensed  -  SS7 capacity designing for each nodes proposed in this bid.  -  Power supply dimensioning.  -  Drawing diagram  -  Floor space lay out. |  | Please refer to the technical proposal and system dimensioning and sizing documents for more information. |
| 3.3.2 | **Capability of the system** | FC |  |
|  | The dimensioning criteria that Bidder take into account to make proper dimensioning for the system proposed (including hardware, software, processing capability....) must base on VinaPhone’s traffic model as follow:   * Capacity = 2,000K active subscribers, 2,000K BHCA, where: * 2.000K active post-paid subscribers * Erlang per subscriber= 25mErl * BHSM = 0.3 * GoS = 0.01% * OC (MOC and MMC) = 55% * MTC = 45% * IVR refill = 0.01 * IVR enquiries = 0.04 * IVR MHT = 30s * USSD refill = 0.02 * USSD enquiries = 0.08 * Erlang per C7 Link (64Kbps)=0.2Erl * Erlang per C7 HSL (2Mbps)= 0.4 Erl * 840K Diameter concurrent sessions for real traffic and 120K concurrent sessions for redundancy. * 6720K sessions per hour. |  | Please refer to the technical proposal and system dimensioning and sizing documents for more information. |
| **IV.** | **P – PROCURING AND PRODUCT SUPPLYING** |  |  |
|  | Requirement for the proposed system is listed below: |  |  |
| 4. 1 | **Hardware** | FC |  |
| 4.1.1 | The system shall have a capacity of 2,500K active subscribers with 2,500K BHCA, 840K Diameter concurrent sessions and 120K concurrent sessions for redundancy, 6720K Diameter sessions per hour.  Hardware with it’s price must be included in Bidder's Bidding Price and detailed in Bidder's Bill of Quantity (BoQ).  Hardware shall technically be stated with all its capacity- the capacity in BHCA, number of subscribers, transactions… of each component and each node.  Hardware manufactured by a third partner shall be showed in the bid document the products, roadmap of the product lines, and other technical specifications concerning the proposal products. |  | Please refer to the technical proposal and system dimensioning and sizing document for more information. |
| 4.1.2 | Every components of the proposal system shall be clearly broken down in the quotation list | FC | Please refer to the bill of quantity for more information. |
|  | The Bidder should also provide the following hardware information: |  |  |
|  | * Typical cabinet layout (please explain in detail): foot prints, typical installation layouts and dimension of equipment proposed. The required free space around the proposed equipment for ventilation and service shall also be specified. |  |  |
|  | * Name, version and release of HW products and their OS version. |  |  |
|  | * Technical parameters including BHCA, CPU load, number of subscribers, number of SS7 links… are clearly described for each relevant component and for the whole proposal system. |  |  |
|  | * Environmental requirement |  |  |
| 4.2 | **Software and RTU** | FC |  |
|  | * RTU of the system is 2,000K active subscriber licensed. * 840K Diameter concurrent sessions and 120K concurrent sessions for redundancy, 6720K sessions per hour. * Bidders are required to provide their own latest state-of-art software version. * Software version, type and version of OS, application, database used in each function node of the system shall be described * System also support Calling Circle, Multiple Identity, Group Account, Notification, Usage based promotion etc for all 2M subscribers |  | Please refer to the Bill of Quantity for more information |
| 4.3 | **Features, functions** | FC |  |
|  | * All features, function proposed shall satisfy with all the services Vinaphone is introducing |  | Please refer to Comverse’s response to Chapter 5 – Scope of Supply – Feature List section. |
|  | * The bidder shall provide the document showing all the basic and option features that the proposal system can support. |  |  |
|  | * The bidder shall have the features listed in Appendix 1that are described in Appendix 2. If the bidder’s feature functions in a way that is similar to the feature described, but the name is different, the bidder have to fill the feature name in the column “BIDDER’S FEATURE”, and state whether it is provided or not. |  |  |
|  | * Any feature that is claimed to be provided has to appear in the price schedule. |  |  |
| 4.4 | **Power supply requirement** | NC |  |
|  | -         The bidder shall prove that the proposal UPS on-line for part of the equipments using AC power is enough for the system to run its full load for a period of at least 8 hours when the main power loses. |  | Comverse do not provide UPS equipment. Elcom please respond |
|  | -         Nodes that use single phase AC power have following conditions: |  |  |
|  | §        AC range input: 200 – 240 VAC |  |  |
|  | §        Frequency: 47 – 63 Hz |  |  |
| 4.5 | **Spare part** | FC |  |
|  | -        Tender is requested to provide full and detailed spare part list for this system. The tenderer has to describe scientifically calculation approach applied to get this spare part list. |  | Please refer to the Bill of Quantity for more information |
|  | -         The value of spare parts, which shall be the same price in the price list, has to be at least 5% of the total hardware cost |  |  |
| 4.6 | **Training and Documentation** | FC |  |
|  | A training course must be offered and detailed in the total bidding price and bill of quantity: |  | Comverse provide two training courses as part of the commercial offer.   1. C1-RT operation & Maintenance -5 days 2. C1- Configuration (PCAT) -5 days   Please refer to the training agenda for more information |
|  | Course 1 |  |  |
|  | General knowledge about Real-time Rating system for post-paid subscriber which shall be: Basic, overview IN model today, Real-time rating/charging, convergent charging in 3G environment, interfaces and protocols, functionalities… |  |  |
|  | Place of training: Vietnam |  |  |
|  | Number of trainees: at least 16 people |  |  |
|  | Duration: at least 10 days |  |  |
| **V.** | **C – INSTALLATION AND COMMISSIONING** | FC |  |
|  | The project is full turnkey so that bidders must take full responsibility in implementation of the project. All the requirement on implementation service specified in this article must be included in the total project price submitted by bidders. |  |  |
| 5.1 | **Installation** | FC |  |
|  | Hardware and Software Installation are both included in the scope of implementation service offered by bidders. |  |  |
|  | Installation plan must be available and approved by VinaPhone one (01) month before the work starts. |  |  |
| 5.2 | **Integration** | FC |  |
|  | Integration into VINAPHONE existing mobile network must be included in the scope of bidder implementation service. |  | Please refer to Comverse’s technical proposal for more information |
|  | The integration shall let all the services, feature, function provided be successfully tested and work | FC |  |
|  | Bidder must be fully responsible and bear costs for integration of the system with every VinaPhone’s entities |  |  |
| 5.2.1 | The bidder shall suggest a detailed solution, drawings, description, explanations for integrating the proposal system into Vinaphone network, connecting with SSPs, MSCs, HLRs, SMSCs, GPRS…., so: | FC | Please refer to Comverse technical proposal for more information. |
|  | -         The post-paid and pre-paid services that Vinaphone is providing using current in-house post-paid solution and Comverse’s Pre-Paid Systems can also run on the proposal system successfully. | FC | Comverse C1-RT can be used for both prepaid and postpaid rating and charging. |
|  | New functions, non-voice services: real-time rating for data, GPRS, SMS… for post-paid subscribers required in this project can be tested. | FC | Please refer to Comverse technical proposal for more information. |
|  | The system shall connect with Vinaphone existing entities, including: Voucher Server (VS), SSPs, MSC/VLRs, HLRs, TSCs, STPs, BGw, SOG, E-load, SMSC, GSNs, WAP GW, without any impact the normal operation of the system in providing and testing the services that Vinaphone are providing.  Integration into VinaPhone’s Voucher Server (VS):  The bidder shall integrate the proposal system into VinaPhone’s VS.  Bidder shall include in the bid document a document certifying that the proposal system has at least once successfully connected with Vinaphone’s VS . Bidder shall include in the bidding the software that has successfully integrated the proposal system into Vinaphone’s VS. **The bidder support to convert TDM SS7 to Signtran signaling for some RTBS SGU**s | Partial compliant | Please note that Comverse RTBS and C1-RT will use the same format toward the SoG gateway. Elcom will take the responsibility to connect the Comverse system to the SOG  Elcom will responsible for integration to existing Comverse RTBS voucher server via the recharge proxy.  The other requirements are OK |
|  | The bidder has to support for migration from existing BSS to PPSIN  The bidder has to supports the integration between PPS-IN and existing BSS. | Partial compliant | Postpaid subscriber profile migration data extraction & cleansing will be done by ELCOM and data will be provided in Comverse format (CCbatch). Comverse responsible for execute CCbatch. The transaction histories are not included in scope of migration.  Detail of migration is described in Technical Solution Offer Description document. |
| 5.2.2 | Bidder shall recommend and describe solutions of connecting the proposal system with VinaPhone’s existing Service Order Gateway (SOG) and Billing Gateway (BGw).The solutions suggested shall not cause any trouble to other VinaPhone’s network nodes. | Partial compliant | Note that Comverse RTBS and C1-RT will use the same format toward the SoG gateway. Elcom will take the responsibility to connect the Comverse system to the SOG |
| 5.3 | **Acceptant Test** |  |  |
|  | -         After finishing installation and integration, bidders must take responsibility carrying out the acceptance test. The acceptance test procedure and testing plan must be agreed between VINAPHONE and bidder before starting. The acceptance test needs to be carried out with the attendance of VINAPHONE representative. | FC |  |
|  | -         The acceptant test shall be included in the service cost |  |  |
|  | -         The acceptance test document must be given to VinaPhone one (01) month before starting the test, so VinaPhone may modify, add and adjust test cases before it is officially accepted. |  |  |
|  | -         Acceptant test must be approved by VinaPhone one (01) months before the test cases are started |  |  |
|  | -         Bidder is required to take responsibility for all testing equipments needed during the test After finishing installation and integration, bidders must take responsibility carrying out the acceptance test. The acceptance test procedure and acceptance test procedure and plan must be agreed between VINAPHONE and bidder before implementation on the site. The acceptance test needs to be carried out with the attendance of VINAPHONE representative. |  |  |
|  | -         The acceptant test shall be included in the service cost |  |  |
|  | -         The bidder shall take responsibility for the equipments, accessories and document used during the acceptance test. |  |  |
|  | -         The bidder shall include an acceptance test document in the bidding document and show test cases for: |  |  |
|  | §        showing the capacity of the hardware, software that meet the requirement. |  |  |
|  | §        system services, functions, that are purchased and showed in the price schedule. |  |  |
| **VI.** | **OTHER REQUIREMENT** |  |  |
| 6.1 | **Project completion date** |  |  |
| 6.1.1 | The completion date (i.e. when the system is ready for commercial service and accepted by Vinaphone) for the system must not be longer than eighteen (18) weeks from the effective date of the contract. | Partially comply | Please refer to the Comverse time schedule for more information. |
| 6.2.2 | No majour traffic disturbance faults should occur during the time of site/system acceptance by VinaPhone. All remains, minor and 3rd party faults must be fixed and accepted by VinaPhone within four (04) weeks, otherwise, a totally new site / system acceptance have to be carried out. The Completion Delivery Time to Vietnam custom shall not be longer than twelve (12) weeks from the effective date of the Contract. | Partially comply | Please refer to the Comverse time schedule for more information.. |
| 6.2 | **Warranty period** |  |  |
|  | For all the equipment supplied under this project and tender, VINAPHONE request for a 12 month warranty from the date of issue Final Acceptance Certificate (FAC). The 12 month warranty period is applied for all hardware, software, features, functionalities and capacity purchased under this project. | FC | Warranty for SW and HW is 12 months upon FAC |
| 6.3 | **Technical support during warranty** |  |  |
| 6.3.1 | Bidders must provide six (06) months on-site supervision for all the node supplied under this project. The six (06) months is counted from the Preliminary Acceptance issuing date | Partial Compliant | Comverse would provide the support as per the warranty conditions. Comverse does have local technical support team for emergency issues. |
| 6.3.2 | During the warranty period, the technical support for equipment purchased under this project must be including in the bidding price with the following items: | FC | Comverse would provide the support as per the warranty conditions. Comverse does have local technical support team for emergency issues. |
| 6.3.2.1 | Customer Service Request (CSR) Handling. Under its CSR Handling service, bidder must provide at any time a proper following of the different service requests sent by VINAPHONE to the bidder. | FC |  |
| 6.3.2.2 | Emergency Support (Severity Level 1 Support) |  |  |
|  | Emergency On-Site Support. If the defect, problem and/or disturbance is of such a nature that VINAPHONE can not remedy the defect, problem and/or disturbance and get the System back in operation and Commercial Service by following instructions given by bidder through Telephone Support, or bidder, for reasons attributable to bidder, cannot provide VINAPHONE with a temporary solution enabling VINAPHONE to put the System back into operation and Commercial Service without visiting the relevant Site, bidder must provide On-Site Support. bidder’s System expert must in such a case be on Site. | FC |  |
| 6.3.2.3 | Severity Level 2 and 3 Support. VINAPHONE must notify bidder of a Severity Level 2 or 3 defect or a problem related to the System through a call to bidder. Bidder must, within a maximum time period of forty-five (45) minutes from the moment when VINAPHONE has made the above mentioned call to the appointed telephone numbers, make a call back to VINAPHONE in order to receive all information related to the defect, problem and/or disturbance from VINAPHONE necessary in order for bidder to find a temporary solution and provide VINAPHONE with instructions. Relevant data regarding Hardware/Software or Documentation must be submitted by VINAPHONE to bidder separately in writing. A CSR will be opened and bidder will respond with an answer within the time-limit set forth below with appropriate information about the reported defect or problem. | FC |  |
| 6.3.2.4 | Consultations and Technical Requests. The Consultations and Technical Requests service – for non-emergency questions – allows VINAPHONE to ask questions on operation and maintenance. All requests will be taken care of during normal working hours. | FC |  |
| 6.3.2.5 | Software Correction Update. The Contractor must continuously provide the Purchaser with Software Updates and Software Corrections approved from the design department within Contractor. |  |  |
| 6.3.2.6 | Definition of Severity Levels: |  |  |
|  | Severity Level l: A serious defect in the System which is causing the System or a major feature therein, to become inoperative or a severe performance degradation in relation to such System or such a major feature. | FC | Please refer to the Description of Maintenance Support Services under Warranty document |
|  | Severity Level 2: A serious defect in the System or a major feature therein, to become disturbed or frequently interrupted or a performance degradation, service degradation or loss of capability in relation to such System or such major feature therein. Such serious defect could also result in operation and maintenance affecting faults that prohibits proper operation or maintenance or results in a lower level of System performance that may result in customer complaints or significantly increased workload on Purchaser’s maintenance staff. | FC | Please refer to the Description of Maintenance Support Services under Warranty document |
|  | Severity Level 3: A minor defect in the Initial System or the relevant System Expansion not affecting the performance, service or operation and maintenance of the Initial System or the relevant System Expansion (but however resulting in a deviation from the System Specification) or minor documentation errors not affecting operation and maintenance of the Initial System or the relevant System Expansion, as appropriate. | FC | Please refer to the Description of Maintenance Support Services under Warranty document |
| 6.4 | **Origin of equipment** |  |  |
| 6.4.1 | Equipment supplied under this project and bid to VINAPHONE must be 100% new and is the latest production of bidder | FC |  |
| 6.4.2 | The certificate of origin of the proposal equipment must be clearly stated by bidder. | FC |  |
| 6.5 | **Ongoing support of VINAPHONE operation and Business** |  |  |
|  | In the understanding by the bidder that VINAPHONE prepaid operation revenue and market competitiveness will depend on the system performance and vendor support, The Bidder will undertake to provide perfect ongoing management, administrative, product expertise, technical and business support to VINAPHONE for a period of three years from date of the Contract. Bidder commitment for ongoing support must be kept regardless if service contract for technical support is signed or not. If Service contract not signed for some reason bidder may be exempted from meeting SLA objectives but it cannot relieve bidder from keeping personnel ready as in commitment explained below. VINAPHONE must be ensured by bidder that he is fully committed and serious to support this system and that he ensure that required resource are specified below are stationed and available in Vietnam.  The Bidder must use a proven project management methodology to bring the project to a timely and successfully conclusion. The bidder will detail the method and processes he will use throughout the deployment and also for ongoing support thereafter.  The bidder will describe the escalation process that he will use to work and communicate with VINAPHONE on deployment problems, system failures and all ongoing support problems. The escalation process will include name and contact details of each personnel involved and full description of their responsibilities. | Partial Compliant | Comverse will provide the support as per the warranty conditions. Comverse does have local technical support team for emergency issues.  Beyond warranty period, Comverse is committed to support Vinaphone under the separated and agreed SLA and Maintenance contract. |
| 6.5.1 | **Deployment and Technical Support Staff** |  |  |
|  | Bidder shall provide sufficient properly accredited and authorized installation staffs to complete the project within the time frame of the agreed schedule. The bidder will provide names and CV’s of (at least) three qualified customer support engineers assigned to work on the deployment and on-going support of the system for three years from date of contract. Customer support engineers must have at least two years of experience on Comverse Prepaid and/or Postpaid system and be able to speak Vietnamese for good communication with VINAPHONE field personnel. The qualifications of customer support engineers must include experiences in implementation of VINAPHONE’s or similar IN system before. The customer support engineers must be assigned and available for the duration of the project installation, testing and commissioning and thereafter for period of three years from Final Acceptance Tests. The Bidder cannot change the assigned Installation staff from contract date until one years from the date of Final Acceptance Certificate (FAC) without the written consent of VINAPHONE | Partial Compliance | Comverse will provide sufficient properly accredited and authorized installation staffs to complete the project within the time frame of the agreed schedule.  Please find attached three profiles. The profiles are indicative and be used during deployment of the system. Comverse does have local technical resource in Vietnam for emergency issues.  Beyond warranty period, Comverse is committed to support Vinaphone under the separated and agreed SLA and Maintenance contract. |
| 6.5.2 | **Senior Technical Support Expert (Tier 4):**  Bidder shall provide authorized high level experts to assist and support the project deployment and for on-going support thereafter. The bidder will provide name and CV of (at least) one qualified Tier4 support engineer assigned to work on the deployment and on-going support of the system for three years from the date of the contract. The Tier 4 expert must have proven working experience of (at least) five years on the bidder Pre-paid system. The Tier 4 expert qualification must include experience in implementation of VINAPHONE’s or similar IN system before. The Tier 4 expert must be assigned and available in Vietnam for the duration of the project installation, testing and commissioning. The Tier 4 expert must be available in Vietnam for at least 6 months thereafter for a period of one year from Final Acceptance Tests.  The Bidder cannot change the assigned senior support expert (Tier 4) from contract date until one year from the date of Final Acceptance Certificate (FAC) without the written consent of VINAPHONE | Partial Compliance | Comverse will provide authorized high level experts to assist and support the project deployment.  Please find attached profile of Comverse T4 engineer (Nguyen Le Anh Quang). The profile is indicative and can be used during deployment of the system. Comverse does have local T4 technical resource in Vietnam for emergency issues.  Beyond warranty period, Comverse is committed to support Vinaphone under the separated and agreed SLA and Maintenance contract. |
| 6.5.3 | **Project Manager** | Partially compliant |  |
|  | Bidder shall assign a qualified Project Manager (PM) to control the project implementation. The Project Manager shall oversee & coordinate all installation and commissioning activities including assistance with advice and direction on such matters as: • Supplies unpacking and storage. • Mechanical fixing of equipment cabinets and associated cable trays and duct. • Equipment configuration. • Network connection & integration. • Testing and commissioning activities. • Operations and maintenance aspects of the equipment. • Equipment Acceptance • Liaising with the Vinaphone for Site access. • Liaising with the Vinaphone's staffs on equipment locations, power, and grounding and transmission connection. • Organizing and controlling the project review meetings and prepare reports. • Arranging the training  The Bidder will provide name and CV of a qualified Project Manager assigned to work on the deployment and on-going support of the Pre-paid system for three years from the date of the contract. The Project Manager must have proven working experience of (at least) two years on the Bidder Prepaid system. The PM qualification must include experience in implementation of VINAPHONE’s or similar IN system before. The Project Manager must be present in Vietnam for the duration of the project installation, testing and commissioning.  The Bidder cannot change the assigned Project Manager from contract date until one year from the date of Final Acceptance Certificate (FAC), without the written consent of VINAPHONE. |  | Comverse will assign a qualified Project Manager (PM) to control the project implementation.  Please find attached profile of Comverse Project Manager (DaoViet Hung). The profile is indicative and can be used during deployment of the system.  Beyond warranty period, Comverse is committed to support Vinaphone under the separated and agreed SLA and Maintenance contract. |
| 6.5.4 | **Manufacturer Representative** | Partial compliant |  |
|  | Bidder shall guarantee that a senior representative from the OEM vendor of the system will be present in Vietnam to support handling the commercial aspects of this contract and on-going assistance to VINAPHONE. The Manufacturer representative will be responsible to ensure to VINAPHONE Management that the Bidder fulfills the commitments specified in the contract and provide answers and clarifications to VINAPHONE questions and requests on behalf of the Bidder.  The Bidder will provide name and CV of the Manufacturer Representative with the following working experience qualifications:   * At least seven years of experience in position of business Mgr leading contracts with Telecom operators for Prepaid or similar billing systems. This period must include three years or more of working experience within the bidder organization. * At least five years of working experience in Vietnam with proven record of execution of contracts with Operators in Vietnam. (Preferably with VNP).   assigned to work on the deployment and on-going support of the Prepaid system for three years from the date of the contract.  The Manufacturer representative must be available for meetings and communication whenever requested by VINAPHONE.  The Bidder cannot change the assigned Manufacturer Representative from contract date until one years from the date of Final Acceptance Certificate (FAC) without the written consent of VINAPHONE |  | Comverse will assign a Manufacturer Representative to handle commercial aspects of this contract.  Please find attached profile of Comverse Representative (Mr. 'Peringhat Krishna Kumar').  Beyond warranty period, Comverse is committed to support Vinaphone under the separated and agreed SLA and Maintenance contract. |
| 6.5.5 | **Product Solution Expert** | Partially compliant |  |
|  | Bidder shall assign a qualified Product Solution Expert to handle and assist VINAPHONE in the efficient utilization of the Pre-paid system in the VINAPHONE network  The Product Expert shall provide on-going consultation and advice on such matters as: • Support VINAPHONE engineering departments on all aspects of integration design and testing of the Pre-paid system with VINAPHONE current and future networks (2G, 3G, GPRS, Postpaid, Billing etc) • Support VINAPHONE marketing and Engineering departments in design, testing and deployment of new services and promotions based on the Bidder Prepaid system capabilities and product catalog offerings  The Bidder will provide name and CV of a qualified Product Solution Expert assigned to work on the deployment and on-going support of the system for three years from the date of the contract. The Product Solution Expert must have proven working experience in implementation of VINAPHONE’s or similar IN system before.  The Product Solution expert must be available in Vietnam for purpose of meetings and communication whenever requested by VINAPHONE.  The Bidder cannot change the assigned Product Solution expert from contract date until one years from the date of Final Acceptance Certificate (FAC), without the written consent of VINAPHONE |  | Comverse will assign a qualified Product Solution Expert to handle and assist VINAPHONE in the efficient utilization of the Pre-paid system in the VINAPHONE network.  Please find attached profile of Comverse Solution Expert (Nontarat Thongpumpurksar). The profile is indicative and can be used during deployment of the system.  Beyond warranty period, Comverse is committed to support Vinaphone under the separated and agreed SLA and Maintenance contract. |
|  |  |  |  |

**Appendix 1: SCORE SYSTEM FOR EVALUATION**

The score system for evaluation below is listed according to the layout of the document in chapter 5.

|  |  |  |  |
| --- | --- | --- | --- |
| III | **E** - Requirement for Engineering and designing | **100** |  |
| 3.1 | Tenderer's Experience and the product proposed | **30** |  |
| 3.1.1 | Reference list | 10 | Full compliance obtains max score |
| 3.1.2 | Experience | 10 | Full compliance obtains max score |
| 3.1.3 | Product roadmap and upgrade path | 10 | Full compliance obtains max score |
| 3.2 | For Pre-installation | 10 | Full compliance obtains max score |
| 3.3 | Engineering Designing | **60** |  |
| 3.3.1 | Dimensioning and designing the system | 20 | Full compliance obtains max score |
| 3.3.2 | The capability of the system | 40 | Full compliance obtains max score |
| IV | **P** - Procuring and Product Supplying | **770** |  |
| 4.1 | Hardware | 25 | Full compliance obtains max score |
| 4.2 | Software and Right to Use | 20 | Full compliance obtains max score |
| 4.3 | Features and Functions | **70** | Full compliance obtains max score |
| 4.4 | Power supply requirement | 10 | Full compliance obtains max score |
| 4.5 | Spare part | 10 | Full compliance obtains max score |
| 4.6 | Training and documentation | 10 | Full compliance obtains max score |
| 4.7 | Requirement for Technical specifications | **625** | Evaluated in chapter 7 |
| V | **C** - Installation and Commissioning | **40** |  |
| 5.1 | Installation | 10 | Full compliance obtains max score |
| 5.2 | Integration | 15 | Full compliance obtains max score |
| 5.3 | Acceptant test | 15 | Full compliance obtains max score |
| VI | **Other requirement** | **90** |  |
| 6.1 | Deduction from the Seller’s Moneys | 20 | Full compliance obtains max score |
| 6.2 | Warranty Period | 20 | Full compliance obtains max score |
| 6.3 | Technical Support During Warranty | 30 | Full compliance obtains max score |
| 6.4 | Governing Law | 20 | Full compliance obtains max score |
| MAXIMUM SCORE GRANTED | | **1000** |  |

In order to get the acceptance from Vinaphone for requirement specified in Chapter 5 and Chapter 7. The system offered must be evaluated and achieved the following conditions:

The score granted in Item III – “**E** - Requirement for Engineering and designing” must be **more than** **80.**

The score granted in Item IV – “**P** - Procuring and Product Supplying” must be **more than** **616.**

The score granted in Item V – “**C** - Installation and Commissioning” must be **more than 32.**

The score granted in Item VI – “**Other requirement**” must be **more than 63.**

The total score granted in Item III, IV, V and VI – must be **more than 900.**

**Appendix 2: FEATURE LIST**

Bidders are required to fill in each column as followed:

- The column ‘**BIDDER’S CORRESPONDING FEATURE’** – Name of the feature functioning the same as the corresponding feature in the column ‘**FEATURES NEEDED**’

- Column ‘**COMP. GRADE (FC/PC/NC)**’ – As explained in the chapter ‘GENERAL REQUIREMENTS’

- Column **‘BASIC/OPTION? (B/O)**’ – State whether the feature is Basic or Option by filling ‘B’ or ‘O’ in

- Column ‘**PROVIDED? (Y/N)**’ – State whether the feature is provided or not by filling with ‘Y’ (Yes) or ‘N’ (No).

- Column ‘**COMMENT**’ – Explanation to further clarify the answer and the feature.

| **IND** | **FEATURES NEEDED** | **BIDDER’S CORRESPONDING FEATURE** | **COMP. GRADE (FC/PC/NC)** | **BASIC/OPTION? (B/O)** | **PROVIDED? (Y/N)** | **COMMENT** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Usage – Based Promotions | Usage Based Promotions | FC | B | Y | Usage-based awards allow subscribers to be rewarded immediately, in real time, for reaching certain usage levels within a configurable period of time. Comverse ONE is capable of monitoring specific kinds of usage (i.e., off-peak calls, local calls, Short Message Service (SMS), recharges, etc.), and targeting bonuses and discounts for that usage. The Comverse ONE supports two types of awards:   * Balance awards − bonuses added to balances that grant “free usage” when a predefined usage level is reached. Bonus awards can be defined in terms of currency, events (e.g., SMS, local calls, etc.), or charge units (e.g., seconds, bytes, etc). * Percentage discounts on usage charges − future activities are discounted when a defined usage level is reached; the percent discount is applied against the total monetary charge for an event. |
| 2 | CAMEL 3 GPRS | CAMEL Enabled services – CAMEL 3 GPRS | FC | B | N | Comverse ONE supports billing for Third Generation (3G) network packet data services using the CAMEL 3 General Packet Radio Services (GPRS) in GSM networks. GSM data services vary from streaming media to “Internet Web surfing.” These data services are fundamentally limited only by mobile handset capabilities and interface bandwidth. |
| 3 | Data Charging (Infrastructure) | Data charging infrastructure | FC | B | Y | Comverse ONE supports charging of multiple simultaneous data services through several interfaces such as PSI (or ECI in Comverse ONE), and Diameter (Diameter Gy is included for integration with GGSN). The billing model is supported by a unique balance management scheme, whereby multiple balances can be configured per subscriber, with each balance targeted to a specific service and associated unit type for charging purposes. The balance reservation mechanism operates with balance management to support charging for simultaneous services, and to ensure that funds are available in the account for current transaction activities without incurring a negative balance. |
| 4 | Free Seconds Deduction per COS | Service Provisioning – Tariff Plan | FC | B | Y | Apart from the support of Free seconds deduction per COS (Class of Service), Comverse ONE offers more flexibilities. Vinaphone can define free units (e.g. SMS, MMS) for every tariff plan and assign these plans per COS.  A Grace Amount is the maximum free transaction allowance (“grace amount”) in Unit Type (such as seconds). The grace amount must always be less than the reservation amount.  For example, if the grace amount for voice calls is set to three seconds, then very short calls of two or three seconds will not be charged. A four second call is charged as a four second call. |
| 5 | Max Call Duration Off-Net & On-Net | Max call duration | FC | B | Y | Max call duration is configurable within Comverse ONE system |
| 6 | Traffic Analysis (Monitoring) Tool | Traffic analysis | FC | B | Y | Comverse ONE automatically collects statistical data from the Service Logic Unit (SLU). This includes service statistics on the SLF layer and platform data on the IPF layer. It also automatically collects DTCAP measurements generated by the DTCAP router that provide information on the TCAP inbound and outbound traffic flows through the Signaling Gateway Unit (SGU). Finally, the Comverse ONE collects traffic monitoring data that supports the reporting and analyzing of traffic statistics on both the SLU and the SDP. |
| 7 | USSD Free Seconds Token | Free Seconds Token | FC | B | Y |  |
| 8 | GSM Data/Fax Bearer Capability | CAMEL Enabled Service, Circuit Switched Fax/Data Bearer | FC | B | Y | The Circuit Switched Fax/Data Bearer feature enables charging of different rates for telephony, fax and other data services. The following transaction types can be uniquely identified and charged:   * Telephony (default) * FAX GRP 2 3 * FAX GRP 4 * SYNTAX VIDEOTEX * INT VIDEOTEX * INTTELEX * X400 |
| 9 | External Recharge Interface Enhancements | Direct Balance Replenishment | FC | B | Y | Comverse ONE allows each subscriber to have multiple Balances, each with their own value, expiration date, unit, usage inclusion/exclusion, and so on. To take advantage of the multiple balances feature, VinaPhone may create Value Added Service (VAS) vouchers that can be used by subscribers to replenish specific balances. Comverse ONE supports such functionality via the Recharge Control Table (RCT), where a currency based voucher can be configured to award units to other Balances besides the Core Balance. |
| 10 | Modified Balances and Expiration Dates Functionality | Recharge Control Table Provisioning | FC | B | Y |  |
| 11 | Modified Recharge Balances and Expiration Dates Functionality | Recharge Control Table Provisioning | FC | B | Y |  |
| 12 | Move Range within IN SYSTEM | Move range | FC | B | Y | Comverse ONE allows assigning of ranges of subscriber numbers to specific SDPs. The system allows for the definition of a range of subscriber numbers larger than the actual number of subscribers that will be created, and provides a means to indicate either how many subscribers will actually be created or what percentage of the range will actually be used. This allows for more efficient allocation of SDP space.  Please note that in this deployment to support 2M subscriber, only one SDP will include in this project scope. |
| 13 | Last Call Charge via IVR | Information server | FC | B | Y | Last call charge via IVR is supported. |
| 14 | Centralized Voucher | Centralized voucher | FC | B | Y | A Centralized Voucher Server (CVS) is provided by Comverse to facilitate roaming. This centralized system holds the vouchers for all systems of the operator, so that, independent of the system to which the subscriber belongs; he or she can purchase the voucher from the operator anywhere in the nation and use it to recharge the account. If, however, the operator chooses to limit the usage of the voucher to a specific region or market, pseudo “service provider” values can be assigned in the voucher database. Provisioning the Service Provider field also allows existing vouchers to be migrated to the new environment for growing customers. |
| 15 | Move Subscriber Ranges Between SDPs | Move range | FC | B | Y | Comverse ONE allows assigning of ranges of subscriber numbers to specific SDPs. The system allows for the definition of a range of subscriber numbers larger than the actual number of subscribers that will be created, and provides a means to indicate either how many subscribers will actually be created or what percentage of the range will actually be used. This allows for more efficient allocation of SDP space.  Please note that in this deployment to support 2M subscriber, only one SDP will include in this project scope. |
| 16 | Blacklist for Friends and Family Dialed Numbers | Blacklist | FC | B | Y | VinaPhone may bar certain numbers according to black list. |
| 17 | VPN Enhancements | VPN Enhancement | FC | O | Y | RTBS (PPS-IN) provides the following configurable CUG call restrictive features:   * Barred/Allowed Lists * Restriction for Intra-CUG Calls Only * Maximum Call Duration   C1-RT does support CUG based on Calling Circle feature. Please note that Calling circle feature does not support short dialing number pattern.  System also support F&F feature |
| 18 | Product Catalog | Product Catalog | FC | O | Y | The product catalog is the graphical user interface (GUI) that facilitates COMVERSE ONE provisioning and administration functions including system setup, service and billing model provisioning, report generation, and recharge card administration.  The PCAT GUI menu & message will be in English language but it support numerous currency unit including of Russia rubel |
| 19 | Real-time Notification | Subscriber Notification | FC | B | Y | Comverse ONE uses the USSD or Short Message Service (SMS) notifications to notify subscribers about events and account status. Multiple messages can be configured, on a per-Primary Offer basis, to be sent at various times and under different conditions. |
| 20 | Special handling of Free Calls (Live Zero) | Special handling | FC | B | Y |  |
| 21 | Accumulator Adjustments | Adjustment | FC | B | Y | Accumulators may be adjusted using the CCC or the unified API |
| 22 | Version Consistency Control | Database version | FC | B | Y | To configure the service for future use, a future version must be defined and selected. Defining a new version involves making a copy of an existing version to use as the basis for the new version. The new version can then be customized as needed and scheduled for use as the current version. Only future versions can be edited. The current version is the one that is currently in use by the system. It will permit changes only to subscriber and voucher data. |
| 23 | Support for 400K Rows in LI relation Table | Location Indicators | FC | B | Y | The Comverse ONE support more than 400K row of LI. Every location is assigned a unique Location Indicator (LI) number. The LI numbers are built according to the location hierarchy, where several digits are allocated to each level of hierarchy. The total length of and LI number is 16 digits, 15 of which are available for use by the location entities. |
| 24 | Unique ID | Unique ID | FC | B | Y | This feature enables VinaPhone to use Global Title translation throughout their CAMEL 2 network. For example, when a call arrives at the SCP, the SCP taking the call responds using a configurable Global Title “calling address,” enabling the network to send all subsequent messages for that call to the same SCP. In this case the Unique ID refers to the PC (Point Code) and GT (Global Title Translation). |
| 25 | MSC ID in PS\_Trans | Event Charging Interface | FC | B | Y | Event charging interface history details are the records of a subscriber’s billable transaction activity through the payment server. The record includes basic information on the activity, such as the date and time, dialed numbers, charge for the activity, and the balance after the transaction has completed. Event Charging type transaction details include several information including the MSC ID |
| 26 | Cancel Roaming SMS refund | Inhibit refund | FC | B | Y | VinaPhone can Inhibit Refunds which will prevent refunds of charges to subscribers for an activity. This affects refunds from Event Charging transactions. |
| 27 | SDP Monitoring and Recovery | Service Data Point Monitoring | FC | B | Y | The Management System Agent (MSA) provides management and monitoring on managed nodes including the SDP. MSA supports the core services Event Management, Task Management, Reporting, Data Collection, and Infrastructure. Recovery Manager (RMAN) is an Oracle tool that allows back up, copy, restore, and recovery of datafiles, control files, and archived redo logs. |
| 28 | VPN CUG Level Calling Restrictions | Virtual Private Network (CUG) service | FC | O | Y | RTBS (PPS-IN) provides the following configurable CUG call restrictive features:   * Barred/Allowed Lists * Restriction for Intra-CUG Calls Only * Maximum Call Duration   C1-RT does support CUG based on Calling Circle feature. Please note that Calling circle feature does not support short dialing number pattern.  System also support F&F feature |
| 29 | Group Account | Group Account | FC | B | Y | The Group Accounts feature allows for the association of two or more account-based subscribers for the purpose of financial management, by allowing multiple subscribers to share a single set of account balances in real-time. Group accounts might include sharing a common pool of funds, controlled recharging, transferring of funds, limiting a group’s or a Group Member’s consumption, and querying member and group consumption information. Group Owners may track group usage or restrict member’s access to certain features.  The system support Group Account feature via shadow balance. One or some subscribers who were configured to have shadow balances share same real balance. |
| 30 | SMS Notify based on Call Type | Notification Options, SMS Notification | FC | B | Y | SMS notification based on the activity type allows a subscriber the option of receiving SMS notification at the end of a specified activity. This could be used, for example, to send a notification to a subscriber at the end of each long-distance call with the actual call charges.  This feature will allow VinaPhone to announce activity charges to the subscriber via SMS at the end of the activity originated by the subscriber. |
| 31 | CDR Storage Enhancements | CDR enhancement | FC | B | Y | The UPM (Unified Platform Management) is the central management point for the COMVERSE ONE platform, and offers a single, consistent system image to all external management agents. It controls access to all management and support functions, offering facilities to both system administrators and external legacy systems via an administrative LAN. UPM provides storage for Call Details Records (CDR) and outage records, and serves as external host for billing collection. |
| 32 | History Extract. | Data Warehouse Export Utility | FC | B | Y | COMVERSE ONE has a Data Warehouse (DWH) utility, which allows extract of four categories of data:   * Daily Subscriber Extract data(sub) * Daily History Extract data(hst) * Six-Hours Extract data(hr6) * Daily Static Extract Data |
| 33 | Multiple Identities. | Multiple Identity | FC | B | Y | The Shadow Scriber (C1 version of RTBS Multiple Identity) feature will enable VinaPhone to allow a subscriber to have multiple configurable identities/accounts. Each of these multiple virtual accounts has several different sets of operating parameters associated with a subscriber record. Therefore, a single subscriber can have multiple Primary Offer, sets of balances, prepaid/postpaid accounts, and subscriber parameters. Subscribers with multiple identities can have a single handset from which they can charge their usage to different accounts. Subscribers with multiple identities have multiple accounts; one account for each identity. The current, or in-focus account, drives all current activity; all other accounts remain operable, and normal periodic activities continue to be processed to operable accounts that are currently not in-focus.  Please note that one subscriber can have 1 real subscriber and multiple shadow subscribers. Each subscriber (real, shadow) will associate to only one Primary offer. |
| 34 | Precision of Balance Separate from that used for Rating. | Charging Precision | FC | B | Y | The Charging Precision feature assures that COMVERSE ONE does all charge calculations to at least six decimal places beyond the major currency unit (e.g., $2.123456) with configurable control over the number of decimal places shown in charges and balances.   * All currency charging calculations are done to six decimal places and currency balances internally support at least six decimal places as well. * Non-currency calculations are done to one decimal place.   Because COMVERSE ONE users may not need to see this high degree of precision, and CCC displays, the CCWS, CDRs, and the SMS and USSD currency tokens support a configurable number of decimal places for currency-related fields. For example, if the charge for an activity is $1.0078, rounding off this figure to $1.01 is typically what is desired.  Please note that by the default system will support the precision in format of 8 digits + 6 digits, which is translated to 99,999,999 VND (or around 5000 USD), or 99,999,999 KB.  If VNP does want different digit pattern such as (10 digits + 4 digits, or 12 digits + 2 digits) then customization will be required. |
| 35 | Inaccessible Database. | Enable Default COS for Inaccessible Database | FC | B | Y | The Inaccessible Database feature can optionally be used in conjunction with any Revenue Recovery option. It supports database inaccessibility both before and after the start of the event. Inaccessible Database allows the network operator to designate a specific Primary Offer to be used whenever the database is unreachable. This Primary offer will always be available in memory, and invoked whenever the database is unavailable.  - If the database is inaccessible at the start of the event, the default Primary offer will be used for the entire event. An outage record is created if Automatic-internal is configured.  - If the database becomes inaccessible after the usage has already started, the subscriber’s Primary offer will be used. An outage record is created if Automatic-internal is configured. |
| 36 | Revenue Assurance | Revenue Recovery | FC | B | Y | The Revenue Recovery feature is a configurable mechanism that allows Comverse ONE to recover revenue that would normally be lost during periods of database unavailability. Billable activities that occur when the Comverse ONE is either completely or partially unavailable, due to a hardware or software failure, network signaling failures, or because of maintenance activities, can be rated and charged to the subscriber. Revenue Recovery offers the operator the flexibility of selecting manual or automatic revenue recovery methods. The Comverse ONE is capable of internally creating outage records of all transaction activities and processing the records. The Comverse ONE also has the ability to capture and process outage records created externally. In addition, Revenue Recovery provides the option of setting limits on usage when the database is not accessible and revenue recovery is not desired. |
| 37 | Furnish Charge Information Field in CDRs. | Call Detail Records | FC | B | Y | Listed below are the CAMEL Phase 2 CAP messages used by Comverse’s CAMEL based Prepaid Service   * ActivityTest * ActivityTest ack * ApplyCharging * ApplyChargingReport * Cancel * Connect * ConnectToResource * Continue * DisconnectForwardConnection * EstablishTemporaryConnection * EventReportBCSM * FurnishChargingInformation * InitialDP * PlayAnnouncement * PromptandCollectUserInformation * PromptandCollectUserInformation ack * ReleaseCall * RequestReportBCSMEvent * ResetTimer * SpecializedResourceReport |
| 38 | Pulse rating | Pulse rating | FC | B | Y | The attached document shows the parameters that can be part of the CDR. These include:  - TOTAL\_PULSE\_CHARGE. The total number of pulses charged for a special pulse tariff (charge type = pulse)  - TOTAL\_PULSE\_DURATION. The activity duration expressed as the product of the pulse size multiplied by the pulse count for a special pulse tariff (charge type = pulse) |
| 39 | Airtime, Toll, and Tax in CDR. | Available CDR Fields | FC | B | Y | Airtime, Toll, and tax can be configured as included in the CDR. |
| 40 | Real Time Balance Management. | Balance Management | FC | B | Y | Comverse provides multiple balances or “credit limits”. Up to 1000 system wide balances (including Core balance), can be configured per Primary offer and up to 40 balances (including Core balance) can be configured as mandatory per subscriber. Each of these balances is targeted to a specific service or activity type for charging purposes. One balance is designated as the “Core” monetary balance and controls the account state. Other global balances has its own unit type (currency, minutes, Kbytes, etc.) and expiration. This multiple balance scheme allows the Comverse ONE to rate the different activity types against subscriber account balances and spending limits to prevent complete drain of funds by one service type. Which balances are used and in what order they are used, are fully configurable in the Balance Charge Order table. A balance reservation mechanism is provided to support charging of individual and simultaneous services. For example, one balance may be assigned to voice calls, one to data sessions, one to SMS, and one for ring tone downloads. Depletion of one balance, such as SMS, does not affect the ability to use the other services, so long as a positive balance is available for that service. |
| 41 | Markup Rating. | Markup Rating | FC | B | Y | Markup Rating allows the subscriber’s home operator to add a percentage markup to a roaming charge. This allows the home system to make some money on the usage associated with roaming subscriber originating voice calls from non-CAMEL 2 foreign networks. |
| 42 | Convergence Feature (Prepaid & Postpaid). | Convergent charging | FC | B | Y | Comverse ONE is Comverse's Converged Billing Solution. Apart from supporting real time prepaid, real time postpaid, and real time hybrid subscribers, it supports multiple types of networks and multiple types of services (voice and data).  Please note that in this project scope the system will mainly responsible for real time postpaid. |
| 43 | Access Number Calls from Foreign networks. | Global Access Numbers | FC | B | Y | All supplementary features are selected through special access numbers. Comverse ONE supports a flexible mechanism for defining multiple access numbers and can be configured to provide these services in the most appropriate manner. |
| 44 | Promised Payments. | Promised Payment | FC | B | Y | Promised Payments will enable VinaPhone to optionally offer to its all account based subscribers a loan for a fixed period of time without service fee. Promised Payments will allow account based subscribers to promise a payment amount and the due date for the payment amount. VinaPhone will be able to loan the promised payment amount till the due date, to the subscribers, without any service fee. The subscriber will be able to use this promised payment amount till the promised payment due date. VinaPhone will reverse the promised payment amount after the promised payment due date, irrespective of the subscriber’s current balance. |
| 45 | Group Account Enhancements. | Financial Management – Recharging Group Member Account | FC | B | Y | Group Account functionality enhancement group management and financial management.  System supports Liability Redirection to allow charging redirection from account to account or from subscriber to shadow subscriber. |
| 46 | Twenty Balances. | Multiple balances | FC | B | Y | COMVERSE ONE provides multiple balances or “credit limits”. Up to 1000 system wide balances (including Core balance), can be configured per Primary offer and up to 40 balances (including Core balance) can be configured as mandatory per subscriber.  Each of these balances is targeted to a specific service or activity type for charging purposes. One balance is designated as the “Core” monetary balance and controls the account state. Other global balances has its own unit type (currency, minutes, Kbytes, etc.) |
| 47 | Flexible Balance Reports. | Balance Reports | FC | B | Y | Each event may have a particular condition or a defined threshold associated with it that will trigger the sending of a notification message to the subscriber. For example, Vinaphone may want subscribers to be notified when their account balance falls below a certain amount. In this case, a balance threshold value is defined as the event condition for this notification and the message will be triggered when that event condition is first detected. Similarly, when a subscriber earns a usage-based award, the bonus or discount threshold triggers a notification message. |
| 48 | Forced Periodic Charge Enhancements. | Periodic Charge Provisioning | FC | B | Y | Vinaphone may want to offer service packages that include a monthly payment bundled with lower call rates. Vinaphone may also want to apply a monthly fee to all accounts to increase revenue. Finally, certain “one-time” charges may be applied at the activation of a service and at the “early termination” of a service. Periodic or “recurring” charges are values that are applied to a subscriber's account at regular intervals. The Comverse ONE supports automatic changes to all of the subscriber's balances. Recurring charges can be part of the same, single recurring charge, or multiple charges based on the customer’s choosing. Multiple recurring charges can be used. Subscribers may be subject to zero, one, or more than one recurring charge, depending on the specific services they use and their Primary Offer. |
| 49 | External Accumulator Adjustment. | Customer Care Web Service, Public Interface | FC | B | Y | One of the operations supported by Unified API (SAPI) is the ability to credit accumulator balances. |
| 50 | Subscriber Currency Transition | Currency Conversion | FC | B | Y | Currency conversion allows Comverse ONE to charge the subscriber in a selected currency when the currency associated with a particular tariff is different from the currency provisioned in the subscriber’s Primary Offer. |
| 51 | Home Zone Locking. | Home zone locking | FC | B | Y | Using location-dependent services, subscribers may be locked to specific home zones. |
| 52 | Negative Offset in Recharge Control Table. | Recharge Control Table Provisioning | FC | B | Y | Negative offset is supported by Comverse ONE. Although the RCT (Recharge Control Table) supports a negative value for the Expiration Offset, the “effective” amount of expiration days applied to the account can never be less than zero.  Similarly, the “effective” amount applied to the balance can never be less than zero. |
| 53 | User Mgmt & Auditing Features. | Account History | FC | B | Y | The details of each account history can be viewed by clicking on a specific account history in the Account History list. There are six types of account histories:   * Activity History Details * Monetary Transaction Record (MTR) History Details * Recharge History Details * Payment Server (PS Trans) History Details * Open Services Access (OSA) History Details * Shadow subscriber History Details – (Shadow subscriber in Comverse ONE provides similar functionalities to RTBS Multiple Identities) * Supplementary offer History Details (Supplementary offer in Comverse ONE provides similar functionalities to RTBS ALCO) * Diameter History Details * Friends and Family Phonebook History Details |
| 54 | Application (No Answer Timer). | Class of Service – Call forwarding | FC | B | Y | Subscribers may forward unconditional and conditional calls based on certain criteria, one of which is when there is no answer. Timers may be set such that when there is no answer within that specified time, the call will be forwarded to a predefined destination. |
| 55 | Tariff by Card. | Tariff by Card | FC | B | Y | Tariffs may be changed by changing the Primary Offer. Recharge cards can be provisioned to allow subscribers to change their Primary Offer via IVR after they have successfully recharged their accounts. The system must first be provisioned to include a list of valid Primary Offers that are available for a subscriber to change to, and which IVR key the subscriber must use to change to the selected Primary Offer. Only Primary Offers of the same type as the subscriber's current Primary Offer (e.g., card-based, number-based) can be listed as valid Primary Offer change options. |
| 56 | Calling Circles. | Calling Circles | FC | B | Y | Calling Circles are groups that associate subscribers for the purpose of differentiated rating. The Calling Circles feature allows network operators to provide differentiated rating for subscribers that belong to the same Calling Circle |
| 57 | CC Agent Credit Limit Amount. | Customer Care User Credit Limit | FC | B | Y | In order to help prevent internal fraud, Comverse ONE supports the maintenance of credit limits for Customer Care User Groups. Two types of limits are supported; a per transaction limit, and a daily total limit, each defined on a per Balance basis. When provisioned, these Group Credit Limits become the Credit Limits for all CC Users assigned to the CC User Group. CC User Credit Limits are inherited by individual CC Users when they are assigned to a CC User Group. When credit limits are assigned to a CC user group, Comverse ONE inhibits any CC user-initiated credit transaction that would exceed either the transaction limit or the daily limit. |
| 58 | ORP Enhancements | Offline Record Processing | FC | B | Y | Offline Record Processing (ORP) is capable of the automated scheduled processing of both internally and externally generated records created during outages for the purpose of recovering revenue. This option is selected on the Revenue Assurance window. ORP is also capable of processing ORP-formatted Transferred Account Procedure (TAP) records from the postpaid system in support of roaming rating and charging. |
| 59 | Accumulator (7 Accumulators). | Multiple Accumulators | FC | B | Y | Accumulators are used to define what services and usage are to be measured for a particular award. An accumulator is capable of counting/measuring all user chargeable activity including calls, recharges, data, and SMS but not system-initiated activities like periodic charges. Awards are defined at specified accumulator thresholds. COMVERSE ONE supports 30 Accumulators/Bonus Plans throughout all operations that use multiple Accumulators/Bonus Plans, including Activity process and Post-Active Accumulator resetting. The maximum number of discounts plans supported per subscriber is defined by the maximum of 30 unique accumulators. |
| 60 | MVNO. | Virtual Network Operators (MVNO) | FC | B | Y | COMVERSE ONE uses the Reseller ID (Reseller is Service Provider in RTBS) attribute as part of the access permission criteria, only allowing users to access objects with a matching Service Provider, and only allowing objects with matching Service Providers to be used together. Thus subscribers, as well as service offerings, can be grouped by Service Provider, and isolated from subscribers and service offerings with non-matching Service Provider attributes. To accomplish this, each Customer Care user is assigned a Service Provider attribute. Many Comverse ONE service objects are also assigned Service Provider attributes. Comverse ONE enforces accessibility rules based upon these assigned Service Providers. |
| 61 | SDP Monitoring and Recovery, Phase II | Operation and Maintenance – Management Framework Overview | FC | B | Y | Monitoring of the SDP is accomplished using two models, the push model and the poll model. By using the two models in a unified way, it is possible to reuse the monitoring utilities that are provided with the various platform components without having to create a new and separate monitoring process. |
| 62 | Dedicated Account | Multiple balance | FC | B | Y | Comverse ONE provides multiple balances. The balance concept can be used to handle “spending limit” or “credit limits” depend of account/subscriber payment type. If account/subscriber payment type is prepaid then the “spending limit” mechanism will be used. If account/subscriber payment type is postpaid then the “credit control” mechanism will be used.  The system supports 1000 system wide balances (including Core balance). The system wide balance will be associated to Primary Offer and up to 40 balances (including Core balance) can be configured as mandatory per subscriber. Each of these balances is targeted to a specific service or activity type for charging purposes. One balance is designated as the “Core” monetary balance and controls the account state. Other global balances has its own unit type (currency, minutes, Kbytes, etc.) and expiration. This multiple balance scheme allows the Comverse ONE to rate the different activity types against subscriber account balances and spending limits to prevent complete drain of funds by one service type. Which balances are used and in what order they are used, are fully configurable by the operator in the Balance Charge Order table. |
| 63 | SMS offline charging for roaming Subscriber | Event Charging Interface | FC | B | Y | Vinaphone Off line charging gateway interfaces to Comverse Billing for SMS offline charging via the Event Charging Interface protocol. The payment server interface protocol supports apply tariff mechanism. In the apply tariff request message, there are information that can be used for SMS offline charging for roaming subscribers such as originating subscriber MSC address (MSC address or Cell id), and terminating subscriber MSC address (MSC address or Cell id). |
| 64 | OCS (Online Charging System) | Online Charging System | FC | B | Y | The Comverse Diameter OCS implements the functionality of Diameter Server. The design supports high availability along with a scalable architecture.  The Comverse Diameter is made up of the following components:   * Diameter Gateway Unit (DGU) * Diameter Service Logic Unit (DSLU)   There are 2 diameters stack which will be supported   * Diameter Charging Interface (DCI): A generic interface that allows a rich set of services and applications to be charged. Supports both event and session charging * Packet Switched (PS): 3GPP has defined PS-specific extensions to DCC. These are specified in TS 32.299 and TS 32.251. Comverse provides a compliant interface to these specifications |
| 65 | 3G charging | 3G charging | FC | B | Y | 3G Video Call on Circuit Switched Network   * Charged using CAMEL 2 * Video call distinguished by either “Bearer Capability” OR “High Layer Compatibility” parameter. * Video call is mapped into a separate AUT and hence can be charged differently from a voice call   Comverse includes the following interfaces   * CAP2 (voice, video) * CAP3-SMS-MO * PSI * CCWS for external IP applications * Diameter Credit Control and Diameter PS. |
| 66 | Network information in history |  | FC | B | Y | Call history table has to consist of network information including Cell ID, MSC ID, LAC etc. (for both RTBS and C1RT)  CCC tool also displays network information including MSC ID, Cell ID, LAC etc in the transaction history of subscriber. (for both RTBS and C1RT) |
| 67 | Location based rating and charging |  | FC | B | Y | System (RTBS and C1RT) can support rating and charging according to location parameters including Cell ID, MSC ID, SGSN ID, location number, Dialed number, IP address, MSRN, handset. |

**Appendix 3: FEATURE DESCRIPTION**

| **IND** | **FEATURES NEEDED** | **DESCRIPTION** |
| --- | --- | --- |
| 1 | Usage – Based Promotions | An feature that allows subscribers to be rewarded through bonuses and discounts for reaching certain usage levels within a defined period of time. The subscriber usage pattern may consist of, for example, the number of calls or the total minutes of usage for all calls originating from location A and terminating at location B. |
| 2 | CAMEL 3 GPRS | The IN SYSTEM supports billing for Third Generation (3G) network packet data services using the CAMEL 3 General Packet Radio Services (GPRS) in GSM networks. Global System for Mobile Communication (GSM) data services vary from streaming media to “Internet Web surfing.” These data services are fundamentally limited only by mobile handset capabilities and interface bandwidth. |
| 3 | Data Charging (Infrastructure) | The IN SYSTEM supports charging for voice, data and video services simultaneously in any account. |
| 4 | Free Seconds Deduction per COS | This feature enables operators to configure free seconds charge units in a more flexible way. It provides options to deduct free seconds according to the primary tariff plan of the COS. Free seconds are consumed according to the tariffs (call type/rate type combinations) configured in the primary tariff plan of the COS. |
| 5 | Max Call Duration Off-Net & On-Net | This feature provides a CUG Restriction for Maximum Call Duration. The maximum allowable duration for any call may be configured on a COS basis. However, this is the maximum for ALL calls for ANY member of the COS. Optionally, the operator can configure the maximum call durations for on-net (intra- and inter-CUG) and off-net calls. |
| 6 | Traffic Analysis (Monitoring) Tool | The IN SYSTEM collects traffic monitoring data that supports the reporting and analyzing of traffic statistics on both the SCP and the SDP. A batch process is run every day (after the completion of the daily purge history process) and records statistics by the hour. This batch process is run on the daily history files on each SDP in the system |
| 7 | USSD Free Seconds Token | In order to provide the operator more flexibility with regard to how a “seconds” balance is displayed in a USSD message, the IN SYSTEM is enhanced to support a number of different formats, including a smart format that matches the way Free Seconds are announced via IVR. |
| 8 | GSM Data/Fax Bearer Capability | This feature enables an operator to charge different rates for telephony, fax, and other data services. This feature is initially implemented for the IN networks using CAMEL messaging. |
| 9 | External Recharge Interface Enhancements | The external recharge server logic will be enhanced to support Enhanced Recharge Statistics, Modified Recharge Fraud Lockout Logic, and Enhanced External Recharge Logs. |
| 10 | Modified Balances and Expiration Dates Functionality | This functionality dictates how the Total Balance and Account Expiration are updated at account creation and when the account goes Active based on the configured COS Expiration Method and related COS provisioning. |
| 11 | Modified Recharge Balances and Expiration Dates Functionality | Following a successful recharge, the subscriber Core and Non-Core Total Balance and Account Expiration are updated depending on several related configuration settings made during COS service provisioning. |
| 12 | Move Range within IN SYSTEM | This feature enables operators to move subscribers in a selected number ID range to a new SDP. |
| 13 | Last Call Charge via IVR | This feature enables the end user to inquire the last call charge by calling a special number. Calls to this number are configured as non-chargeable, so any follow-on calls to this number give the same last call charge. This is needed for public phones where after making the call, the caller and the public phone operator can call this special number to get the call charges. This is important for the old phones that do not support SMS or metering capabilities |
| 14 | Centralized Voucher | This is a database management solution that stores all vouchers from multiple IN Solution systems in a simple SDP. It enables these multiple IN Solution systems to share a common set of vouchers. |
| 15 | Move Subscriber Ranges Between SDPs | This feature enables operators to move subscribers in a selected number ID range to a new SDP. |
| 16 | Blacklist for Friends and Family Dialed Numbers | The IN SYSTEM provides the capability of restricting calls on a per COS basis using the barred number list. Additionally, the VPN feature in RTBS enables the operator to provision allowed/disallowed numbers on a per-CUG basis. |
| 17 | VPN Enhancements | In RTBS, this feature enables users to restrict CUG members to intra-CUG calling on a member-by-member basis. Optionally, all CUG members can be restricted to intra-CUG or intra- and inter-CUG calling only. |
| 18 | Cyrillic Product Catalog | Provides support for Product Catalog application. |
| 19 | Hot Notification | With this feature, USSD notifications are sent to subscribers through the SS7 Signaling Network and appear as text messages directly on a handset screen. USSD notification is applicable only in GSM networks and with the following limitations:  - Only Standards ETSI GSM Phase 2 and Ericsson Phase 2 are supported.  - All HLRs must support either ETSI GSM Phase 2 or Ericsson Phase 2 in the network.  Only the default alphabet is supported as identified in ETS TS 100900, V7.2.0 (1997-07), Release 1998. |
| 20 | Special handling of Free Calls (Live Zero) | This feature enables the IN SYSTEM to control the treatment of billable and non-billable (free) activities based on the subscriber’s available balances and current state. Activities may range from circuit-switch activities such as voice calls to external service activities such as OSA and GPRS transactions |
| 21 | Customer Care Work Station Accumulator Adjustments | The CCWS interface was enhanced to allow manual modifications of any accumulator associated with a particular subscriber’s profile. This feature is valid for the existing subscribers only. |
| 22 | Version Consistency Control | This feature ensures that the version replication process has completed before allowing version scheduling, un-scheduling, and version deletes. In addition, it restricts scheduling versions and version deletion during heavy system usage by providing a configurable 24-hour schedule of restricted hours. |
| 23 | Support for 400K Rows in LI relation Table | This feature provides increased system capacity to support 400k lines. |
| 24 | Unique ID | This feature enables a customer to use Global Title translation throughout their CAMEL 2 network. For example, when a call arrives at the SCP, the SCP taking the call responds using a configurable Global Title “calling address,” enabling the network to send all subsequent messages for that call to the same SCP. |
| 25 | MSC ID in PS\_Trans | The MSCID represents the subscriber’s location and is recorded for each SMS transaction so that a customer care agent can view this information, if needed. |
| 26 | Cancel Roaming SMS refund | This feature enables the service provider to prevent refunds of charges to subscribers for payment server transactions. |
| 27 | SDP Monitoring and Recovery | This feature provides the highest SDP availability by making maximum use of the redundant equipment built into its hardware. For this feature, the SDP and its clients determine when the SDP is not providing acceptable service and then determine if the standby host might be able to provide better service than the currently active node. If so, service is moved automatically to the standby host and automatic recovery operations are started on the formerly active node. |
| 28 | VPN CUG Level Calling Restrictions | In RTBS, this feature enables the operator to restrict CUG members to intra-CUG calling on a group basis. Optionally, all CUG members can be restricted to intra-CUG or intra- and inter-CUG calling only.  Support Friend &Family group for discounting |
| 29 | Group Account | This feature facilitates the association of two or more account-based subscribers of financial management by allowing multiple subscribers to share a single set of account balances in real-time. Group accounts might include sharing a common pool of funds, limiting a group’s or a group member’s consumption, and controlling recharging. Group owners can track group usage or restrict member’s access to certain features. |
| 30 | SMS Notify based on Call Type | This feature gives subscribers the option to receive notifications based on Activity in addition to the existing notifications |
| 31 | CDR Storage Enhancements | This feature guarantees reserved storage for outage records (enforces quota on outage records/CDRs, gives outage records higher priority, more frequent purging of records other than outage records). |
| 32 | History Extract. | This feature enables extraction of comma-separated files from selected columns in history tables. |
| 33 | Multiple Identity. | This feature enables a service provider to allow a subscriber to select up to seven configurable identities/accounts. Each of these multiple virtual accounts has several different sets of operating parameters currently associated with a subscriber record. Therefore, a single subscriber can have multiple Classes of Service (COS), sets of balances, prepaid/postpaid accounts, and subscriber parameters. Subscribers with multiple identities can have a single handset from which they can charge their usage to different accounts. |
| 34 | Precision of Balance Separate from that used for Rating. | Precision of Balance Separate from that used for Rating – This feature ensures that all currency charge calculations are at least 4-decimal places beyond the major currency unit, with configurable control over the number of decimal places shown in charges and balances. |
| 35 | Inaccessible Database. | This feature enables the operator to limit usage if the database becomes unavailable for subscriber access during processing of the usage. This feature can also be used in conjunction with other recovery options. |
| 36 | Revenue Assurance | This feature ensures that no billing data from rating and charging is lost when the IN becomes partially or completely unavailable. When Revenue Recovery is enabled and the database becomes unavailable, the system internally creates outage records of all transaction activities. These records are later processed through the rating engine to recover any missed charges. |
| 37 | Furnish Charge Information Field in CDRs. | This feature enables IN to “mark” MSC-generated CDRs using the CAMEL FurnishChargeInformation field to indicate that the IN has charged for the usage. |
| 38 | Pulse rating | This feature records the number of pulses, sometimes called “ticks, used as a count of time units, for reporting in a CDR field. |
| 39 | Airtime, Toll, and Tax in CDR. | This feature reports airtime, toll, and tax information are reported to the Leap Postpaid billing system in CDRs. |
| 40 | Real Time Balance Management. | This feature accomplishes synchronization of balance information between prepaid and postpaid billing functions by enhanced reporting of balance changes between the two functions, and by applying all periodic charges in prepaid mode. |
| 41 | Markup Rating. | This feature enables the operator to apply an additional percentage markup associated with roaming rating that the subscriber’s home operator adds to the charge for an activity as determined by the network operator in the visited system, allowing the home system to make some money on the usage. The markup is used for activities that are not rated in real time, which, at this time, is limited to roaming-subscriber originating voice-calls from non-CAMEL2 foreign networks. |
| 42 | Convergence Feature (Prepaid & Postpaid). | This feature integrates Prepaid, and Postpaid Billing and CRM functionality into a single, unified billing platform. |
| 43 | Access Number Calls from Foreign networks. | This feature allows subscribers to reach access numbers for supplementary services (Information Server, Recharge Server, Admin Menu, etc.) from foreign networks. |
| 44 | Promised Payments. | This feature allows operators to advance funds to subscribers for repayment at a later date |
| 45 | Group Account Enhancements. | This feature enables the group owner to transfer currency from the owner’s core balance to a member’s core balance, and for the group owner to transfer from the group owner’s core balance to another currency balance of the same owner account. |
| 46 | Twenty Balances. | This feature makes all ten system-level balances available to individual subscribers in a COS. The Recharge Control table, the Balance Charge Order, and the IVR balance announcements support this feature. |
| 47 | Flexible Balance Reports. | This feature enables the operator to generate notifications to subscribers based on new non-Core balance trigger events. |
| 48 | Forced Periodic Charge Enhancements. | With this feature, the operator can configure periodic charges to be applied once while a subscriber is Post-Active. |
| 49 | External Accumulator Adjustment. | This feature enables the customer care user to update accumulator values for modifying subscriber bonus plans. |
| 50 | Subscriber Currency Transition. | (Ruble−Dollar COS Transition) This feature enables the subscriber to change to a COS using a different currency than his current COS. |
| 51 | Home Zone Locking. | This feature prevents fixed wireless users from receiving calls in any but their home calling zone. |
| 52 | Negative Offset in Recharge Control Table. | This feature enables the operator to promote application-specific recharge voucher cards that only deposit additional funds in one of the promotional balances without extending the account life cycle, thereby preventing potential revenue loss. |
| 53 | User Mgmt & Auditing Features. | This feature is a subset of the core features identified as key to Operators and includes several functions related to tracking user activities. |
| 54 | Application (No Answer Timer). | This feature allows operators to configure application timers to support both the standard for CAMEL international roaming and networks with different application timer values. |
| 55 | Tariff by Card. | This feature allows subscribers to join a more favorable (i.e., lower priced) tariff plan by recharging with a high priced voucher. For example, recharging with a 30 dollar voucher would afford a better rate than recharging with a 10 dollar voucher. |
| 56 | Calling Circles. | This feature allows for the association of subscribers for purposes of discounted call rates |
| 57 | CC Agent Credit Limit Amount. | This feature allows operators to set limits to the amount of credit Customer Care users can issue to subscribers |
| 58 | ORP Enhancements | This feature allows support for rating and charging subscribers using different two currencies on a single IN system. |
| 59 | Accumulator (7 Accumulators). | This feature increases the number of accumulators per subscriber from five to seven. |
| 60 | MVNO. | This feature (Multiple Virtual Network Operators) allows the use of a single IN system by multiple operators without compromising information security for any of the operators. |
| 61 | SDP Monitoring and Recovery, Phase II | This feature allows operators to monitor SDP performance to detect situations of degraded service and take actions to improve the level of service. |
| 62 | Dedicated Account | This feature allows one subscriber has more than one account; example one subscriber has voice account, sms account, gprs account, mms account. I which, we especially emphasis three functions based on this feature that is  - pre-active for dedicated account  - tariff and bonus base on accumulate usage  - promotion interface |
| 63 | SMS offline charging for roaming Subscriber | This feature allows operator to be able to offline-charged SMS for international roaming subscribers. The proposal system must charge SMS on MSCid and Cellif parameter of SMS CDRs that generated by VNP |
| 64 | OCS (Online Charging System) | This feature allows operators to use CAP2, CAP3, and Diameter protocol as charging interface protocol. Diameter stack shall divide into 2 layers, Diameter Gateway, and Diameter applications. Diameter applications shall support DCCA, Diameter PS. The diameter stack shall also flexible to support new diameter application. |
| 65 | 3G charging | This feature allows the system to capable to support 2G and 3G charging on the same system. The interface protocol for 3G shall based on ECI, OSA, CAP2, CAP3, and Diameter, The system shall able to charge the video call via CAP2 |
| 66 | Network information in history | Call history table has to consist of network information including Cell ID, MSC ID, location number, LAC etc . (for both RTBS and C1RT)  CCC tool also displays network information including MSC ID, Cell ID, location number, LAC etc in the transaction history of subscriber. (for both RTBS and C1RT) |
| 67 | Location based rating and charging | System (RTBS and C1RT) can support rating and charging according to location parameters including Cell ID, MSC ID, SGSN ID, location number, Dialed number, IP address, MSRN, handset. The system can use one of these parameters or combine some of them. |

**APPENDIX 4:**

