

Open Net BSS/OSS System Implementation Scope of Work

N(N)LE OPEN NET

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1. Purpose of this document

This Scope of Work document contains descriptions of the deliverables and services to be provided and activities to be carried out by a Proposer (Proposer) to participate in the bidding process, and if the Proposer turns out to be the ultimate winner, to implement BSS and OSS solution (Solution) in Open Net.

Detailed descriptions of the functionality to be implemented by the target Solution are provided in the following documents:

- Business Support Systems (BSS) - Functional Requirements Specification
- Operations Support Systems (OSS) - Functional Requirements Specification
- General Technical Requirements - Functional Requirements Specification
- Hardware and 3rd party Software description – Hardware Software

2. Proposers activities during participation in tendering phase

2.1. Requirements analysis and identification of the Solution

Proposer shall study the Functional Requirements Documentation provided with this Scope of Work

Proposer shall Identify appropriate Solution to address the requirements described in the Functional Requirements Documentation. A Solution is a combination of computer software, server hardware, and other systems (such as networking and storage equipment) that implements the functionality required.

The Proposer shall explain in sufficient detail to Open Net representatives how the individual requirements are to be addressed by the solution.

If the addressing some of the requirements requires customization of the system that goes beyond changing configuration and mandates source code change, Proposer shall explicitly state this and provide approximate and realistic timelines for such changes

To this end, Proposer shall provide sufficient documentation, carry out presentations and demonstration sessions

The Proposer shall bear responsibility to advice, which means to suggest additional functionality not mentioned in the Requirements Documentation but providing it would improve the overall efficiency of the Solution. Such a scenario is likely since the Proposers possesses experience of implementing similar solutions in other operators.

2.2. Sizing of the solution

Proposer shall provide sizing services of the solution, which is required for identification of the characteristics of the deployment environment.

Sizing shall be based on the following assumptions:

Total Number of Customers – 150

Total Number of Accounts – 500

Total Number of Customer Facing Service Instances – 1,000

Total Number of Resource Facing Service Instances – 3,000

Total length of optical cables – 5,500 km

Cable types (by number of cores - 24, 48, 72, 96, 144, 192, 216, etc.)

Total Number of network inventory items – 110,000

ODF - 1,300

ODF ports - 50,000

Shelters - 50

Racks - 120

Manhole - 10,000

Routers (active equipment) - 150

Ports on the routers - 4,000

SFP - 4,000

Uninterrupted Power Supply - 100

Other IP based small devices - 200

Maximum Number of network inventory operations per day – 200. (An operation means an action performed by the system users on the network inventory database, such as adding/removing resources, modifying existing resources, setting resources attributes)

Maximum Number of Customer Orders per day – 50

Maximum Number of Resource Orders per day – 200

Maximum Number of customer-related operations (creating new customer/accounts) – 10

Maximum Number of customer and account related transactions per day (payments, adjustments etc.) – 100

Solution shall maintain system history information for 5 years

2.3. Identification of solution deployment environment

The critical components of the Solution offered shall be deployed in an on-premise infrastructure (provided by the Proposer). The non-critical components of the Solution offered may be cloud-based, which means that it can be deployed to a well-known cloud services provider (Google, Microsoft Azure, Amazon Web Services)/ infrastructure that is accessible from Georgia. In this case, Proposer shall produce a comprehensive description of the cloud resources to be utilized for the successful functioning of the Solution

The Solution may be entirely deployed in Open Net premises, in which case Proposer shall provide a required hardware and storage.

To the maximum extent possible, the hardware requirements shall include capacity parameters in vendor neutral terms. This will give Open Net a possibility to choose the hardware with similar capabilities from several vendors

Irrespective of deployment mode, the Solution shall not use any item, such as USB dongle that ties any component of the solution to hardware and or virtual hosts.

2.4. The role and acting capacity of the Proposer

Solution identified by the Proposer may require one or more third party software components, which can be either open source or commercial software. In this case, Proposer shall provide exhaustive list of such software and deliver this software together with the Solution

The Solution selected by the Proposer shall be of the latest (updated/ upgraded within last 2 years), most stable release that has already been installed in at least two successful implementations elsewhere

Proposer shall detail the licensing arrangements for use of the Solution by Open Net. Licenses shall be perpetual, limited in time or a combination of both.

2.5. Nomination of the project team

Proposer shall nominate the personnel that will participate in the different phases of the project. The list shall include at least the following roles:

- Project manager
- Solution architect – a person with a complete knowledge of the solution, with the responsibility to design and configure solutions
- Delivery specialist – a person responsible for the deployment and configuration of the solution designed by Solution Architect
- Operations specialist – a person responsible for operating the system during the baby-sitting phase of the project
- Test manager – a person responsible for testing and subsequent bug-fixing
- Training personnel

Proposer shall opt to assign different roles to one individual. Likewise, the complexity of the solution may necessitate assigning two or more individuals to each role. Nevertheless, the project manager shall be a dedicated individual.

Nominated staff should possess enough expertise and experience to successfully carry out their responsibilities and shall have a minimum of three years of experience in their respective roles.

Proposer shall provide CVs of each member of the project team

3. Proposers activities during and after the implementation phase

3.1. Development of LLD documentation

Proposer shall develop Low-Level Design (LLD) Documentation for the Solution together with the Open Net team.

LLD document is an extension HLD document provided at bidding phase and will serve as the main technical reference throughout the implementation and post implementation operation of the system. It

shall contain detailed information regarding all components of the system. Examples of such information are:

IP addresses/DNS names of all containers or virtual machines that host system components

For databases, complete description of all tables/objects that are contained in the databases

For individual software components – locations of executable and configuration files

LLD document may refer to HLD document for specific topics and provide more detailed visualizations when necessary

To facilitate this process, Proposer shall provide templates, questionnaires and other tools used in similar projects implemented elsewhere.

3.2. Installation and configuration of the components of the Solution

Proposer shall install all components of the Solution in the previously agreed deployment environment, which may be on-premises or hybrid.

The Proposer shall also install all third-party software required. Non exhaustive list of such software is provided below:

Operating systems

Virtualization platforms (such as KVM, VMWare)

Containerization software (Docker, Kubernetes)

Middleware (e.g., messaging brokers, load balancers etc.)

Databases (relational databases, in-memory databases, document and key/value stores etc.)

Solution monitoring tools

Proposer shall deploy all necessary patches and updates for all components that are necessary for functioning of the Solution as a whole

Proposer shall configure all components of the system to meet the requirements described in Functional Requirements Documentation and Low-level Design documentation (LLD)

3.3. Integration of network equipment in Zabbix monitoring system

Open Net uses Zabbix as network monitoring solution for active network components. While Zabbix is not a software component to be provided by the Proposer, the Proposer shall provide services required and sufficient for integration of Open Net active network components into the existing Zabbix solution

3.4. Integration of network equipment in a TACACS Plus server solution

Open Net is planning to use a TACACS Plus server implementation for controlling access to the network devices that support TACACS Plus protocol.

Proposer shall propose an open source TACACS Plus server solution and provide services required and sufficient to integrate the Open Net network elements that support TACACS Plus

3.5. Acceptance testing

Proposer shall provide a comprehensive list of Acceptance Tests.

The purpose of these tests is to make sure that the Solution installed and configured in the production environment is ready for commercial operation

Before commencing the testing process, Acceptance Tests are subject to the approval by Open Net. Open Net is entitled to make changes to the original tests and/or propose additional tests to be carried out.

Proposer shall assist Open Net personnel in carrying out Acceptance Testing

Proposer shall undertake corrective actions should one or more acceptance tests fail. This may involve (at the discretion of the Proposer):

Changes of the configuration of the system

Development and deployment of a software patch (update)

Combination of both

Additionally, Proposer may propose a workaround/temporary solution. This must be approved by Open Net if the Proposer commits to a realistic timeframe to deliver a permanent solution.

The Solution shall not be deemed ready for production operation unless all Acceptance Tests pass.

Successful completion of the Acceptance Tests shall result in Provisional Acceptance of the Solution by Open Net.

3.6. Production launch

Proposer and Open Net shall agree on a mutually acceptable date of launching the Solution in the production environment

Proposer shall provide baby-sitting services for the subsequent three months. This means that the Proposer operates the Solution together with Open Net personnel

Proposer shall fix all bugs and deficiencies identified during the baby-sitting period and implement permanent solutions for all workarounds.

After four weeks of trouble-free operation of the solution, Proposer and Open Net shall agree to sign Final Acceptance document that means Support and Maintenance Period has started.

3.7. Support and Maintenance

Proposer shall provide Support and Maintenance services for at least 5 years after Final Acceptance

Support and Maintenance services shall include at least the following:

Aiding Open Net staff in the process of operating the Solution by answering technical questions regarding various aspects of the Solution

Remedying any interruption in the operation of the system in accordance with the recovery objectives stipulated in Service Level Agreement (SLA)

As part of proactive maintenance activities, conducting Solution health check at least on a quarterly basis, producing the resulting report and sharing it with the relevant Open Net personnel. Health check shall include components of the system and all third-party software

Applying periodic updates to the components of the system.

Applying emergency patches/configuration changes when necessary

If during the operation of the system a service-affecting irregularity is discovered that requires upgrade of the solution to a newer version, the upgrade shall be performed by the Proposer free of charge.

If during the operation of the system it becomes known that any component of the system, including third-party software requires a critical update for any reason, the Proposer shall apply the corresponding remedy (patches, updates and/or configuration changes) free of charge.

Any system/component update mandates at least 48 hours prior notification to Open Net and is subject to an express approval from Open Net

Proposer shall nominate a Dedicated Support Engineer – an individual with overall responsibility for Support and Maintenance activities at Open Net. This individual shall have complete knowledge of the Open Net deployment.

Proposer shall provide the means of handling and recording of support-related communication with the Open Net staff, such as ticketing system

Proposer shall provide a 24-hour support hotline telephone number and support e-mail address

3.8. Warranty and Terms

Proposer must satisfy the following Warranty and Terms parameters during the support and maintenance of the Solution.

Recovery objectives

	Severity of Incident		
	Critical	Major	Minor
Response Time	<=20 min	<=30 min	<=60 min

Restore Time	<=4 hours	<= 8 hours	<=48 hours
Root cause elimination time	<=30 days	<= 45 days	<= 60 days
Root Cause Analysis (RCA) Report Preparation	<=30 days	<= 45 days	<= 60 days

Severity definitions

Critical	System is out of service fully or partially, resulting in disruption of one or more business processes that prevents from Open Net operating normally
Major	Limited part(s) of the system is out of service, resulting in impairment or degradation of one or more business processes, but Open Net continues to operate normally, albeit with delays and occasional interruptions
Minor	A system malfunction that affects only isolated parts of the system that does not disrupt any of business processes.

3.9. Training

Proposer shall conduct training sessions that are necessary to achieve self-sufficiency in operating, maintenance, and monitoring of The Solution.

Training sessions shall encompass at least Solution Architecture, System configuration, System operation, Monitoring and Management capabilities

Proposer shall nominate experienced trainer (or trainers) with minimum three years of experience both with the Solution and in acting as a trainer

Training fee shall be included in the Financial Proposal

The Proposer shall be prepared to conduct training at local premises selected by Open Net with the trainer (or trainers) present on site.

4. Documentation to be provided by the Proposer

4.1. Documents to be provided during the Expression of Interest:

Proposer shall prove that it has been active in the BSS/OSS¹ software market at least for the past 7 years.

Proposer shall provide at least 5 years roadmap for the development of the solution. The roadmap shall include all required third-party software components. This includes open-source software used in the Solution.

Proposer shall produce documentation that is sufficient to prove past successful implementations of the similar solution (OSS/BSS)² during the period starting from January 1st, 2018 to the present day. To prove such implementation, the Proposer is asked to provide:

- An official letter signed by an authorized representative of the organization where the Solution has been deployed and successfully implemented;
- A contract and acceptance documents from previous projects

4.2. Solution Technical Proposal that includes, as a minimum:

- High Level Design (HLD) document describing system architecture (system modules, which high-level functional parts they cover, the relationships and flow of information between the module etc.)
- Low Level Design (LLD) document templates
- In the case when a multi-vendor solution is proposed, the list of solution components and their vendors
- Deployment mode (on-premises or hybrid) and detailed descriptions of computing resources required for the proposed deployment mode
- Detailed list of third-party software and their respective roles and names of vendors and licensing (commercial vs. open source)
- Complete description of Support and Maintenance services.

Proposer shall produce all legal documentation (certificates, partnership agreements, etc.) to prove that it is authorized to deploy the components of the solution by their respective vendors. This authorization may be specifically granted for the scope of Open Net project or constitute a wider partnership covering past and future projects

4.3. Project implementation Plan, that includes at least:

- Work Breakdown Structure (WBS) detailing all activities of the project
- Project schedule with important milestones highlighted
- Resource plan that contains human resources both from Proposer and Open Net
- Resource Responsibility Matrix

¹ In case if Proposer only has OSS or BSS experience, it is allowed to form a Joint Venture with the missing product.

² Even if such implementation was done together with another vendor

- Risk mitigation plan