



هيئة تنظيم الاتصالات
Telecommunications Regulatory Authority

Numbering Management System Request for Proposals

Version 1.0 [Final]

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Public Document

Deadline for submitting proposals: Thursday 18 February 2010, 1:30pm local time

1 Introduction

- 1.1 The telecommunications market in the Kingdom of Bahrain has been transformed following Government policy to stimulate the national economy. In October 2002, Legislative Decree No 48 of 2002 promulgated the Telecommunications Law that enabled liberalization of the telecommunications sector and the formation of the Telecommunications Regulatory Authority (TRA).
- 1.2 TRA is an independent body and has a direct responsibility to ensure effective liberalization of the telecommunications market, oversee fair competition, give private investors confidence with regard to competition, and make available the related telecommunication resources, such as the radio spectrum and numbers, in a fair and transparent manner.
- 1.3 Article 3(c)(12) of the Telecommunications Law requires TRA to prepare and follow up the execution of the National Numbering Plan¹ (NNP) and assign numbers to operators in accordance with such a plan.
- 1.4 Currently, TRA manages all numbering operations, including allocations, reservations, withdrawals and maintenance, via an in-house developed application running on Microsoft Access.
- 1.5 As the current method of number management is not scalable, highly error-prone, time-consuming and inefficient, TRA intends to procure a Numbering Management System (NMS) to improve the overall numbering management processes.
- 1.6 This Request for Proposals (RFP) document describes the minimum system requirements for the Numbering Management System to be procured by TRA

¹ The current version of the NNP as at the date of publishing this document is available at http://www.tra.org.bh/en/pdf/National_Numbering_Plan_2.pdf

2 Document Purpose and Scope

- 2.1 The purpose of this document is to describe the minimum system requirements and features that should be implemented in the required NMS.
- 2.2 Broadly speaking, the NMS is intended to support TRA in maintaining numbering resources, allowing Licensees to access the NMS online via a web browser, and allow the general public to query the numbering database.

3 Definitions

- 3.1 **Licensee** – The Licensee who is requesting numbering capacity.
- 3.2 **Block** – The unit in which a number resource is administered. See Appendix A for details on each Numbering Resource type.
- 3.3 **Entity** – A generic name used to refer to either a Licensee or the NMS Administrator at the company level.
- 3.4 **Request** – An Application for numbering capacity.

4 Solution Overview

4.1 The basic functions of the NMS will include:

- 4.1.1 Enabling Licensees to submit online Requests;
- 4.1.2 Providing functionality for storing, reviewing and processing Requests, and viewing Request status;
- 4.1.3 Allowing TRA to manage, record and track all number resources;
- 4.1.4 Creating and maintaining inventories of number resources and searching blocks of available numbers for a Licensee;
- 4.1.5 Producing reports that allow TRA to analyze usage patterns;
- 4.1.6 Providing secured login and password with access permissions. The general public must be able to query the NMS without the need for credentials;

5 System Requirements

5.1 *User Roles and Tasks*

- 5.1.1 *NMS Managers* are defined as the personnel responsible for the overall operation of the NMS. They will have access to the system hardware, software, and database. NMS System Administrators are responsible for performing routine maintenance such as database backups, system updates, and initial and supplemental data loads.
- 5.1.2 *NMS Operators* are defined as the personnel responsible for administering the numbering resources. They will have access to all areas within the NMS and all data. NMS Operators are responsible for allocating and maintaining numbering resources in accordance with the NNP. To support this, the NMS tasks for NMS Operators are defined as follows:
 - (a) Establishing/Adjusting NMS System Parameters;

- (b) Establishing Licensee profiles with contact and security information;
- (c) Maintaining administration table data such as Number Block status;
- (d) Maintaining Number Block resources through opening of new Blocks;
- (e) Entering Number Block Requests on behalf of Licensees;
- (f) Reviewing and processing numbering capacity Requests;
- (g) Requesting reports on Number Block Status;
- (h) Requesting reports on Number Block Request Status;
- (i) Loading Utilization and Forecast data provided by Licensees;
- (j) Requesting reports on Utilization and Forecast data;
- (k) Requesting reports on KPI's and targets; and
- (l) Viewing NMS processing log entries.

5.1.3 *Licensees* are defined as the personnel responsible for the administration of numbering resources within their respective organizations. They will have access to limited areas within the NMS for data that belongs to their organization and for data that is public. Licensees are responsible for entering accurate Number Block Request information and supportive data into the NMS. To support this, the NMS tasks for Licensees are defined as follows:

- (a) Entering Number Block Requests (for allocation, reservation, or withdrawal);
- (b) Reviewing Number Block Requests;
- (c) Requesting reports on Number Block Status;
- (d) Requesting reports on Number Block Request Status;
- (e) Uploading annual numbering report data²;
- (f) Supplying and managing Utilization and Forecast data to the NMS System; and

² Details of which are included in the NNP.

- 5.1.4 *General Public* is defined as any user without elevated privileges. They cannot amend any part of the NMS data, nor can they submit applications or requests. They can only query for reports to view allocations and reservations.
- 5.2 *User Access Lists/Permissions* - The solution should allow for configurable user access. This should be done on an individual and a broad (group/overall policy) basis.
- 5.3 *Reports* – The system should include a number of pre-defined reports, to be defined between TRA and the selected vendor prior to solution implementation. NMS Operators should also be able to create and retrieve customizable scheduled and ad hoc reports as required.
- 5.4 *Web Access/Interface* – The solution should be web-based. It must be accessible and usable through a standard internet web browser³ (Microsoft Internet Explorer and Mozilla Firefox at a minimum. Preferably also usable through Opera, Safari and Google Chrome). Barring the System Access Request process, all processes should be web-enabled.
- 5.5 *System Audit Logs* - All actions should be registered in an audit log along with a timestamp, the name of the user implementing the action, the action attempted, the IP address, and the user's browser header information (which normally includes browser type, operating system, and other information).
- 5.6 *Response Timers/KPIs* - All Processes should be timestamped based on the system time. Open processes should include a running timer that shows how long the process has been open. Closed processes should include a timestamp of when they were closed as well as the name of the user who closed the process. If the open processes timer extends beyond a pre-determined KPI, an alert should be sent to a pre-defined user on the system. These KPIs should be configurable by the NMS System Administrator.
- 5.7 *Email Notifications* – All notifications to NMS Operators or Licensees should be sent via specified email addresses, which should be configurable.
- 5.8 *Security* – The solution must be hardened against all known and unknown attacks (zero day attacks), including resource depletion, cross site scripting, SQL injection and other forms of attacks.⁴

³ The user's experience must not vary or be affected based on the browser in use.

⁴ Respondents should assume that network based security hardening will be provided by TRA including firewalls, intrusion prevention and DOS protection.

5.9 *Database Technology* – The solution must be based on one of the following database technologies (in order from most to least preferred):

- (a) MySQL;
- (b) PostgreSQL;
- (c) Oracle .

6 Process Flows

6.1 The following are the anticipated high level process flows for the NMS. This is not an exhaustive list of all possible processes in the NMS. Further processes may be defined by TRA with the selected vendor prior to implementation.

6.2 **NMS System Access Request/Approval** details the flow of an Licensee's request for access to the NMS System.

6.2.1 Licensee submits an application through email or postal mail;

6.2.2 The NMS Operator verifies that all required data has been submitted. If not, the request is returned to the Licensee;

6.2.3 If the all required data has been submitted and is approved, the NMS Operator creates the necessary Licensee profile and access rights;

6.2.4 The NMS Operator notifies the Licensee by email of the requests' approval and access details.

6.3 **Number Resource Request** details the flow of input of a Request by an Licensee and the system validations.

6.3.1 The Licensee submits a Number Resource request;

6.3.2 The NMS Operator approves/rejects the Request;

6.3.3 The Licensee is informed of the response (and reason in case of rejection);

6.3.4 Billing data is updated in the event of approval of request.

6.4 **Resource Request Verification** details the flow of approval or denial of a Request by the Administrator. Changes in the status of the Request and Block are given.

- 6.4.1 NMS Operator is notified by the NMS via email of a pending Number Resource request;
 - 6.4.2 NMS Operator retrieves Number Resource request from the NMS;
 - 6.4.3 NMS Operator approves or rejects the request. The NMS Operator may also request additional information from the Subscriber if the application is incomplete;
 - 6.4.4 NMS makes the appropriate changes to the number database and notifies the subscriber.
- 6.5 **Resource Request Status Change** details the changes in Request and Block status through the entire request process.
- 6.5.1 Subscriber submits request for change in allocated Number Resources;
 - 6.5.2 NMS Operator retrieves the change request;
 - 6.5.3 NMS Operator approves or rejects the changes;
 - 6.5.4 NMS applies the changes to the number database where applicable;
 - 6.5.5 Subscriber is notified of the outcome.

7 Status Selection Options

- 7.1 Below are possible status options for certain indicators in the solution.
- 7.2 **Block Status** – The status of a Block can be any of the following:
- 7.2.1 Allocated: a Block that has been assigned to an Entity and is waiting for a confirmation of being placed in-service.
 - 7.2.2 Free: a Block that is available for assignment.
 - 7.2.3 In Service: a Block in which service is being provided to customers.
 - 7.2.4 Protected: a Block that has been designated as unavailable for assignment.
 - 7.2.5 Special Use: a Block that has been designated as reserved for special use and is therefore unavailable for assignment.

- 7.2.6 Test: a Block that has been designated as reserved for testing purposes and is therefore unavailable for assignment.
- 7.2.7 Reserved: a Block that has been designated as reserved for a Licensee pending activation.⁵
- 7.3 **Request Result** – The result of the last action performed on the Request. The result can be any of the following:
- 7.3.1 ActivationInProgress: For an approved Request with more than one block, at least one but not all blocks have been put into service.
- 7.3.2 Approved: The Request has been approved by the NMS Operator.
- 7.3.3 Cancelled: The Request has been cancelled by the NMS Operator or Licensee at the Licensee’s request.
- 7.3.4 Completed: All work has been completed related to this Request. All requested blocks have been put into service.
- 7.3.5 Rejected: The Request has been denied by the NMS Operator for the reason indicated in the response.
- 7.3.6 Incomplete: The Request has been returned by the NMS Operator because it is missing information.
- 7.3.7 New: The Request has been entered into the system and is waiting for approval by the NMS Operator.
- 7.3.8 Suspended: The Request has been denied by the NMS Operator because the Licensee’s resource assignment privileges have been suspended.

⁵ A *Reserved* block may have a *Licensee* field of “Confidential”. See TRA’s NNP for more details on Reservations.

8 Response Instructions

8.1 General Submission Instructions and Notes

- 8.1.1 Responses to this RFP should address all of the requirements;
- 8.1.2 The successful bidder will be required to enter into a formal contract with the TRA on terms to be supplied;
- 8.1.3 Until any such contract has been executed, this RFP and any responses to it shall in no way bind TRA;
- 8.1.4 All respondents should include a statement that they have read and understood the terms and conditions contained herein;
- 8.1.5 All respondents should include a one page cover letter indicating their understanding of this project;
- 8.1.6 All respondents should include a table or list indicating which sections and sub-sections of this RFP are addressed and are in compliance in their submission;
- 8.1.7 Bidders shall provide full CVs and contact details of the people to be involved in this project. CVs should be formulated to show the relevant skills and experience required for this project;
- 8.1.8 Bidders are requested to provide a summary of their relevant capabilities and past experiences in related issues. Examples of similar work carried out by the respondents would be helpful in evaluating proposals;
- 8.1.9 The cover letter, compliance checklist, company history and staff CVs must be provided in the beginning of the proposal as part of the pre-evaluation qualification, as detailed in Section 9 'Evaluation';
- 8.1.10 This bid is open to teams and/or individuals that are not necessarily part of a company;
- 8.1.11 If the bidder is a team or individual not affiliated with a specific company, then it is a mandatory requirement that complete documentation of the implemented solution be provided in addition to change and configuration management procedures to ensure continuity of the solution;

- 8.1.12 Proposed project plan and methodology must also be a part of the response. A sufficiently detailed implementation plan must be included in each bid, including the amount of time required to achieve the set milestones and the time required to complete deployment of the necessary systems.;
- 8.1.13 Proposals should be straightforward and demonstrate the capacity of the bidder to address the practical requirements of the work contained herein;
- 8.1.14 Proposals should include a clear, detailed and itemized list of hardware and software required to implement this project. If the proposal includes costs for providing such hardware and software, these costs *must* be listed separately in the financial proposal;
- 8.1.15 Proposals should include a minimum of two (2) references for previous work done in a similar capacity;
- 8.1.16 TRA may issue any clarification to all participants as an addendum to the RFP. Such an addendum will become part of the RFP documents before the deadline;
- 8.1.17 All respondents are required to submit two (2) separate proposals; a technical proposal and a financial proposal. The financial proposal must be submitted in hard copy only and submitted to TRA by the closing date mentioned below. The financial proposal envelope should be clearly marked "Name of Bidder – Numbering Management System RFP – Financial Bid"
- (a) The technical proposal must not include any financial data. Bidders that violate this requirement will be automatically disqualified;
 - (b) Technical proposals in response to this RFP should be submitted by e-mail only to the address specified below, not later than the deadline specified below;
 - (c) It is the responsibility of the respondents to ensure that their responses have reached TRA within the required timeframe;
 - (d) Financial proposals must be itemized and presented in a tabulated format that easily allows determining unit costs and multi-year discounts (if any). At a minimum, professional fees must be separated from expenses (travel, accommodation, etc) if any;

(e) Financial proposals will only be opened for those submissions that achieve the minimum technical score, as outlined in the Evaluation section;

(f) Bidders may include supporting documents and attachments;

8.1.18 Proposals should be received as soon as possible and in any case not later than the date set out on the front page of this RFP;

8.1.19 General information about TRA may be found on TRA's web site at www.tra.org.bh

9 Evaluation

- 9.1 Respondents must be aware of the evaluation criteria to be employed by TRA in evaluating and marking responses. This section describes the evaluation process to be employed by TRA in qualifying bidders responses;
- 9.2 Proposals which violate the submission requirements outlined in Section 4 'Response Instructions' will be immediately disqualified
- 9.3 All bids must meet the following pre-qualification criteria:
 - 9.3.1 Bidder must provide a one-page cover letter that states their understanding of this project;
 - 9.3.2 Bidder must provide a check list of compliance with *all* requirements of this RFP;
 - 9.3.3 Bidding companies must have been an established organization for at least 3 years;
 - 9.3.4 Participating staff of the bidding organization, or the team members and individuals in the case of non-company bidders, must each have at least five (5) years experience in programming commercial web applications;
 - 9.3.5 Each staff member of a participating bidder must be certified, or have formal training, on the tools, SDK's and database(s) to be deployed during the project.
- 9.4 Any submission that does not meet any of the pre-qualification criteria detailed above will be immediately disqualified;
- 9.5 All proposals that pass the pre-qualification criteria will be evaluated technically. In order to qualify in the technical evaluation, bidders must obtain a score of at least 75% in their respective evaluations;

9.6 The distribution of marks for the technical evaluation is as follows:

#	Criterion	Maximum Score (%)
1.	Understanding of the work and tasks required	10
2.	Quality and suitability of proposed solution and database technology	40
3.	Skills and expertise of nominated staff, to include similar work conducted in the past	15
4.	Local presence of bidder, existing partnerships and support channels from industry vendors, and commercial agreements that may support the requirements of the project	5
5.	Number of Bahraini's assigned to the project	10
6.	Overall quality and completeness of the proposal, including professionalism and user friendliness in layout and presentation	10
7.	Positive recommendations from project references	10
	<i>Maximum possible score</i>	100

9.7 The financial part of each bid is applied as a factor to evaluate "Value-for-Money". In other words, the most economically advantageous proposal may not necessarily be selected, unless it offers the best value for money.

10 Evaluation Outcome

- 10.1 TRA expects to review responses and appoint a Consultant within three calendar weeks of the deadline for submitting responses;
- 10.2 TRA reserves the right, at its sole discretion, to accept any response it chooses, in whole or in part, negotiate with any consultant and accept any alternate response;
- 10.3 TRA is not bound to accept any response.

11 Co-Operation

- 11.1 The successful bidder will be expected to fully co-operate with TRA and other entities in the amendments, planning, information exchange, documentation, meetings and/or other communications or activities that TRA considers necessary in order to fulfill the contract in an expedited and successful manner.

12 Fees and Payment

- 12.1 Bidders should provide itemized costs/fees for each Phase in the implementation plan. A tabulated format should be provided to show all costs in Bahraini Dinars in a form that can be easily reviewed. Bidders are reminded that financial proposals must be submitted separately in a sealed envelope, to be delivered no later than the date and time indicated in the Response Instructions above;
- 12.2 TRA will make payments according to its policy on contract payments;
- 12.3 A performance bond of 1% of the value of the project will be required from the successful bidder.

13 Contact Information

The address for submitting proposals is as follows:

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