MOBILE TELECOMMUNICATIONS LIMITED

MTC30-18-RFP

REQUEST FOR PROPOSAL (RFP)

SUPPLY AND MAINTENANCE OF A CONVERGED BSS/OSS [BILLING AND REVENUE MANAGEMENT, CUSTOMER AND PRODUCT MANAGEMENT, INVENTORY MANAGEMENT, ESB] SOLUTION

CLOSING DATE:

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PART E: TECHNICAL REQUIREMENTS

Table of Contents

AVAILABILITY **3**

RELIABILITY **4**

PERFORMANCE **6**

SCALABILITY **7**

SERVICEABILITY **8**

SECURITY **9**

AUDITING **11**

SYSTEM ADMINISTRATION / MANAGEMENT **12**

CUSTOMIZATION **14**

TECHNICAL SUPPORT **15**

GENERAL **15**

ADDITIONAL INFRASTRUCTURE REQUIREMENTS **19**

ID	Requirement	Compliance	Vendor Remarks	Reference
1	**AVAILABILITY**			
1.1	**Hardware Specifications for the private cloud hosting**			
1.1.1	The computing environment must be designed to ensure a predictable degree of operational continuity during production hours to cater for unplanned equipment failure without degraded services being experienced Fail-over option such that there is no service interruption in case of failure			
1.2	**Databases**			
1.2.1	Database design must be able to withstand hardware failures without affecting the availability and integrity of the data			
1.2.2	Database architecture must incorporate one or multiple availability methods, e.g. log shipping, transactional replication and or automated clustering failover, locally and remotely			
1.3	**Application modules**			
1.3.1	Application modules must be configured to support automatic fail over methods in the event of equipment failure			

1.4	**Storage Specifications**			
1.4.1	The storage environment must be designed to ensure a predictable degree of operational continuity during production hours to cater for unplanned equipment failure without degraded services being experienced			
1.5	**Operating System**			
1.5.1	The Operating Systems must be configured to support automatic fail over methods in the event of equipment failure			
1.6	**Disaster Recovery**			
1.6.1	The proposal must include an industry based automated backup solution, including the hardware and software, for the host systems, databases and consolidated storage.			
1.6.2	The proposal must include a DR option to be hosted off site			
2	**RELIABILITY**			
2.1	**Server Infrastructure designs**			
2.1.1	The proposed server architecture must be reliable in that it must be able to operate for long periods of time without having to be rebooted or powered-off and not be prone to hardware failures			

2.2	**Application**			
2.2.1	The proposed application architecture and design must be reliable in that it behaves in a predictable manner when it comes to the input, processing and output of information			
2.2.2	The proposed application must have built-in checks and balances to protect itself against wrongful operations			
2.2.3	The proposed application should behave in a predictable manner under various workloads and not be prone to failures			
2.2.4	The application should behave in a reliable and predictable manner during un-planned and planned outages			
2.3	**Databases**			
2.3.1	The proposed database architecture and design deployed must behave in a reliable manner in that it maintains data integrity and consistency across databases and tables under various workloads and during un-planned outages			
2.4	**Operating System**			
2.4.1	The proposed Operating System must be able to operate for long periods of time without the need to reboot and behave in a reliable manner during high workloads and un-planned failures			
2.5	**Storage**			

2.5.1	The proposed storage architecture and design must be able to operate for long periods of time without the need to reboot and behave in a reliable manner during high workloads and unplanned failures			
3	**PERFORMANCE**			
3.1	**Servers performance**			
3.1.1	The computing environment must be sized to process and store data for at least 400 000 A6 fixed subscribers and 600 000 A6 mobile subscribers taking into consideration growth of 100 000 per month			
3.1.2	Computing Resource utilization levels should be within acceptable limits even during peak cycles while also preventing the computer resources from being under utilized			
3.2	**Database**			
3.2.1	The database environment must be designed and configured to handle huge volumes of read and write transactions concurrently			
3.3	**Storage specifications**			
3.3.1	The storage area network topology and storage subsystems must be designed to perform well under huge I/O workloads between host and storage system with minimal latency experienced without wasting storage resources			

3.4	**Application**			
3.4.1	The Applications must support large user base (minimum 2,000 client users) the application access and performance should be consistent regardless of the number of users accessing the systems.			
3.4.2	Self-care portals on web browsers (for external customers) must support large user base (minimum 500,000 client users) the application access and performance should be consistent regardless of the number of users accessing the systems.			
4	**SCALABILITY**			
4.1	**Hardware Infrastructure specification**			
4.1.1	Solution must support horizontal and vertical scalability without the need to go through major hardware/software changes/upgrades with minimum impact on additional rack space and cabling			
4.1.2	The proposed hardware must be of the latest generation technology allowing the platform to scale and support growth in subscribers, products and services in line with TN growth projection plans over a minimum period of 3 years without requiring major hardware or software upgrades that exceed more than 10% on the initial system procurement costs.			
4.2	**Storage specification**			
4.2.1	The Storage topology must be designed to be easily scalable without changing the topology design when adding hosts and storage subsystems			

4.2.2	The storage subsystems design must able to scale vertically and horizontally			
4.3	**Databases**			
4.3.1	The proposed Database must support scale up and scale out methods in order to meet growth demand while maintaining rate of transactions per second			
5	**SERVICEABILITY**			
5.1	**Documentation**			
5.1.1	All documentation pertaining to operations and maintenance, configurations should be provided.			
5.1.2	The system should provide online help documents			
5.1.3	All documentation pertaining to installation and configurations of the systems should be provided			
5.2	**Maintenance**			
5.2.1	The solution should allow the platform to be patched for OS and application without disrupting the services			
5.2.2	The Solution should allow technical team to install, update, configure, debug, maintain the platform and restore services online or within short period of time			

5.3	**Database**			
5.3.1	Database should have built in technologies to allow maintenance, monitoring and operational			
5.3.2	The database structure and table definitions must be provided in comprehensive and detailed documents			
5.4	**Applications**			
5.4.1	Solution should be able to be upgraded with no or minimum downtime on services			
6	**SECURITY**			
6.1	**Operating System**			
6.1.1	System shall provide strong security mechanism to safeguard system access to prevent data from unauthorized access.			
6.1.2	All servers and computers hosting billing platform must have a proven antivirus software or security protection			
6.2	**Database**			
6.2.1	The database design should indicate what security mechanism is in place to protect data confidentiality, integrity and availability			

6.2.2	System shall support the encryption facility for the stored data where necessary			
6.2.3	System shall support security/consistency check for data transfer.			
6.3	**Application**			
6.3.1	Different levels of security and access control at different access levels should be enforced			
6.3.2	Solution should have standard antivirus or other security protection software			
6.3.3	Access control on different menus should be set for various application users			
6.3.4	Data fencing: only authorized users to be able to access specified customer data			
6.4	**General**			
6.4.1	Different levels of security and access control at different access levels including but not limited to: session, role, application, fields etc.			
6.5	**Protocols / Connections**			
6.5.1	The solution should allow secure network protocols over unsecure ones			
6.5.2	Support IP-V4 and IP-V6			

6.5.3	The solution should allow some services to run on DM Zone such as Self-care portal			
6.5.4	For mediation purposes, various protocols must be supported			
7	**Interoperability**			
7.1	**General**			
7.1.1	The system should be able to connect to the core network elements within MTC			
7.1.2	The system should be able to connect to other platform or third party outside MTC such as Banks			
7.1.3	The systems should allow customers to use various web browsers to connect and access customer care portals			
7.1.4	The scope of the project implementation shall specifically cover the integration of the offered solution with the proposed infrastructure, and shall ensure interoperability with whatever technology proposed with full support for Open Interoperability Standards as set out in the SID under NGOSS for BSS and OSS.			
8	**AUDITING**			
8.1	**General**			
8.1.1	For all configuration changes: System shall provide logging/Auditing features that can be enabled as an option for selected configuration changes and actions including but not limited to; adding users, removing			

	users, changing systems parameters etc. (Minimum fields; date created, created by, date last updated, last updated by, previous value, new value)			
8.1.2	Solution shall support Time/Date stamp, user ID logging for all system changes, whether system or user-initiated actions.			
8.1.3	Solution shall support the logging of all Unsuccessful/ unauthorized log in and access attempts. (IP Address, Attempted access user name, date, time, number of attempts)			
8.1.4	Solution shall support Tracing Transaction life cycle (before and after transaction completion).			
9	**SYSTEM ADMINISTRATION / MANAGEMENT**			
9.1	**Application**			
9.1.1	Built-in tools should be available for performing system administration functions – Memory allocation and monitoring, process monitoring and management, performance monitoring including uptime tracking.			
9.1.2	Automated user password maintenance to be implemented			
9.1.3	The proposed systems should allow standard third-party tools to be used in maintaining the system.			
9.1.4	The proposed system should provide configurable options for alerts, warnings, alarms, failures and status on both hardware devices, network connections, services, processes etc.			
9.1.5	The system should support single sign on for all application modules			
9.1.6	The systems should support the enriched data exchange facility to allows the export of all page-based data, especially for BI and CRM data transfer			

9.1.7	Hardware naming structure should be according to MTC naming standards			
9.1.8	The application must provide standard printing handling functions			
9.2	**Database**			
9.2.1	Provide the facility for database reporting. Include what reports are generated, time frames, due dates and storage of the reports.			
9.2.2	System shall support the encryption facility for the stored data where necessary			
9.3	**Servers**			
9.3.1	Provide remote server administration tools			
9.3.2	System must provide strong security mechanism to access the servers, application and databases			
9.4	**Storage**			
9.4.1	Provide storage administration tools			

9.5	**Operating System**			
9.5.1	The proposed system should have an option for full event logging			
10	**CUSTOMIZATION**			
10.1	**Documentation**			
10.1.1	The supplier to submit a detail white paper/technical spec indicating the level of customization & configuration that can be done in the system at all level such as: ● Users ● IT (Internal MTC Technical/Dev Team) ● Supplier (Vendor) The white paper should also indicate whether it is required to change the source code or not and the training required in each customization level			
10.1.2	Online documentation and help for customization facilities (SOP)			
10.1.3	Supports customization by providing a rich list of knobs to change.			
10.2	**General**			
10.2.1	Ability to customize system features without a need for changes in the source code. Configure and deploy method is preferred rather than development approach to customization			

10.2.2	Provide development tool to support any customization or additional requirements			
10.2.3	Supports extensions by ▪ Plug-ins ▪ Inheritance or wrapper ▪ Scripting Simple Object Access Protocol (SOAP)			
10.2.4	The system should support users to define short-cuts and favorites to menus and help documentation			
11	**TECHNICAL SUPPORT**			
11.1	**General**			
11.1.1	On-line Help facility			
11.1.2	24x7 customer support with suppliers and vendors for agreed specified period of time			
11.1.3	System Error messages should be fully documented including cause and resolution using a unique numeric referencing for knowledge base, FAQ option			
12	**GENERAL**			
12.1	The proposed solution must provide Telco carrier-grade capabilities			

12.2	SOA architecture with well-defined service interfaces for all modules that are implemented			
13	**Standards and Preferences**			
13.1	**Hardware Preferences**			
13.1.1	N/A			
13.1.2	N/A			
13.2	**Operating System Preferences**			
13.2.1	Carrier grade, preferably ????			
13.3	**Database Preferences**			
13.3.1	If any??? (Oracle or DB2)			
13.3.2	Unified database architecture which minimizes the number of databases in order to save on costs and improve management, scalability, reliability, performance and security			

13.4	**End User Preferences**			
13.4.1	PC's and laptops running Windows 7 and later must be supported			
13.4.2	Web enabled user interface supporting the latest versions of desktop and mobile Internet Browsers and Java runtime environment plug-ins			
13.5	**Web Servers**			
13.5.1	The system must specs for a web server/s with sufficient CPUs, RAM, storage, and network connections.			
13.5.2	Latest web server software versions must be supported			
13.6	**International Standards**			
13.6.1	The solution must be based on the TM Framework standard (TAM, eTOM)			
13.6.2	The solution must conform to the NGOSS/Frameworx standards			
13.6.3	The Billing must conform to IFRS 15, standards			
13.6.4	The Billing must conform to GDPR (General Data Protection Regulation)			

13.7	**Interfaces**			
13.7.1	All Interfaces shall use an EAI Common bus infrastructure based on the e-TOM/TAM Framework.			
13.8	**Interoperability**			
13.8.1	Web services supporting XML-based open standards, such as WSDL, SOAP, and UDDI.			
13.9	**Architecture**			
13.9.1	Solution Architecture must be multi-tiered to isolate and promote independence between the user interface, application, OS and database.			
13.9.2	The solution should provide separate environments for ● Development ● Test &Training ● Production			
13.10	**Integration**	**Compliance**	**Vendor Remarks**	**Reference**
13.10.1	All Integration to 3rd Party systems should be done via an ESB			

ADDITIONAL INFRASTRUCTURE REQUIREMENTS

Req #	Compute Capabilities	1=Required 2=Desired 3=Optional	Yes or No	Explain – If yes explain how. If no explain how requirement will be met in another way
1	Ability to run virtual machines	1		
2	Ability to run dedicated servers	1		
3	Ability to upgrade individual compute resources	1		
4	Ability to pool compute resources	1		
5	Ability to provide real-time HA and redundancy			
6	Ability to dynamically assign compute resources for business-critical workloads	1		
Req #	**Services & Support**	**1=Required 2=Desired 3=Optional**	**Yes or No**	**Explain – If yes explain how. If no explain how requirement will be met in another way**
1	Ability for proposed solution vendors to unpack, install and configure proposed solution at MTC location	1		

2	Ability for proposed solution vendor to provide basic and intermediate training to IT staff. Training plan to be included	1		
3	Ability to provide experienced installation staff with at least three years of onsite installation experience with proposed solution for customers of similar size and complexity	1		
4	Ability for proposed solution to be real-time remotely monitored for system software and/or hardware failure as part of support	1		
5	Ability for proposed solution to be maintained and kept up to date for system software, hardware and firmware.	1		
6	Include a detailed BOM based on designs indicating Hardware, Software & Licenses required to complete the setup for the OSS/BSS stack including Databases, OS and applications showing TCO for 3 years, including SLA maintenance and support for professional services and software licenses	1		
7	Clearly document all assumptions about DR Site	1		
Req #	**Storage capabilities**	**1=Required 2=Desired 3=Optional**	**Yes or No**	**Explain – If yes explain how. If no explain how requirement will be met in another way**
1	Ability to scale storage without affecting critical IT services	1		
2	Ability to handle multiple types of pools (for example pools based on performance and pools based on business rules) for unique configuration of different resources.	1		
3	Ability to provide at least 4 I/O paths to each host	1		

4	Ability to provide a minimum of 4 storage controllers that: Must be set for automatic load balancing and must be set for automated failover.	1		
5	Ability to provision storage and provision VMs and physical servers from a single pane of glass	1		
6	Ability to provide tiered performance pools requirements, for example SSD, SAS, or SATA	1		
7	Ability to automatically re-assign workloads between storage tiers	1		
8	Ability to support synchronous replication or similar technologies	1		
9	Fault Tolerant should be understood as RPO=0, RTO=0. Failure in any of the two sites should allow the data to be available in the other one with no interruption	1		
10	Support thin provisioning	1		
Req #	**Network capabilities**	**1=Required 2=Desired 3=Optional**	**Yes or No**	**Explain – If yes explain how. If no explain how requirement will be met in another way**
1	Ability to physically separate some networks from others. Further separation of networks, via vlan's for example, is acceptable within the physically separate network groups.	1		
2	Ability to manage all IP addresses; hosts, management, switches, etc… through a single pane of glass.	1		
3	All communications between hosts and the storage subsystem should be native fiber channel or FCoE	1		
4	Hosts to storage subsystem communications should be at 8Gb or higher speeds	1		
5	Hosts to network data connections should be redundant	1		

6	Ability for proposed solution to provide external data network connections at 10GbE	1		
7	Ability for data network connectivity to be redundant	1		
8	Ability to provide redundant network paths with no single common point of failure	1		
Req #	**Security Capabilities**	**1=Required 2=Desired 3=Optional**	**Yes or No**	**Explain – If yes explain how. If no explain how requirement will be met in another way**
1	Ability to support hard partitioning (physical separation)	1		
2	Ability to support encryption	1		
3	Ability to provide roles-based administration with different access types and capabilities	1		
4	Ability to audit transactions	1		
5	Intrusion prevention features	1		
Req #	**System Management**	**1=Required 2=Desired 3=Optional**	**Yes or No**	**Explain – If yes explain how. If no explain how requirement will be met in another way**
1	Ability of the solution to provide system level reporting	1		
2	Ability of the solution to provide capacity-based reporting	1		
3	Ability for proposed solution to provide provisioning reporting	1		
4	Ability for proposed solution to provide performance reporting – either through direct reporting interface or API to external tools	1		
5	Ability for proposed solution to plug into our CMDB	1		
6	Ability for proposed solution to provide event correlation	1		

7	Ability to manage all aspects of proposed solution from single pane of glass	1		
8	Ability for proposed solution to plug into our incident, problem, and request tools	1		
9	It should provide Secure Sockets Layer (SSL) 128-bit encryption and Secure Shell (SSH) and support VPN	1		
Req #	**Total System**	**1=Required 2=Desired 3=Optional**	**Yes or No**	**Explain – If yes explain how. If no explain how requirement will be met in another way**
1	Ability for proposed solution to remain functional without impacting performance degradation during component failure	1		
2	Ability for proposed solution to remain functional without performance degradation for regular maintenance	1		
3	Ability for proposed solution to remain functional without impacting performance failure or degradation due to power supply failures	1		
4	Ability for proposed solution to provide N+1 power supply for all pieces of equipment	1		
Req #	**Other Requirements**	**1=Required 2=Desired 3=Optional**	**Yes or No**	**Explain – If yes explain how. If no explain how requirement will be met in another way**
1	Ability to scale up or out individual converged infrastructure components	1		

2	Ability for converged infrastructure solution to be supported for five years from single vendor	1		
3	Ability for converged infrastructure solution to be integrated with common cloud management solutions. For example, Huawei Fusion Cloud	1		
4	Ability for converged infrastructure solution to support the use of various popular mainstream commercial and open source hypervisors	1		
5	Green Policy Innovations to support worldwide project of reducing burdens on the environment - Provide documentation	1		