Request For Proposal (RFP) for the Selection of Consulting Firm (National)

For

Design, Development and Implementation of Centralized Online Web-Based Application Software for Data Entry, Processing, Analysis, Management, Monitoring, Reporting and Server Commissioning of Statistical Business Register System.
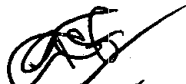
Issued to:

Request for Proposal No: 52.01.0000.402.32.047.12 (Part)-1069   Dated: 27/10/2016

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Issued By: Md. Dilder Hossain
Designation: Project Director
Date: 27/10/2016

প্রতীক ভট্টাচার্য্য
আয়ন ও ব্যয়ন কর্মকর্তা
অর্থনৈতিক শুমারি ২০১৩ প্রকল্প

মোঃ দিলদার হোসেন
প্রকল্প পরিচালক
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Section 6. Terms of Reference (TOR)

Design, Development and Implementation of Centralized Online Web-Based Application Software for Data Entry, Processing, Analysis, Management, Monitoring, Reporting and Server Commissioning of Statistical Business Register System.
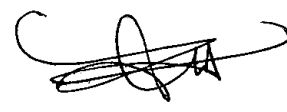
1. Background

The Business Register (BR), a component of Economic Census 2013 Project, is a means of identification and listing of Business Entities of the country to build the central repository of information on businesses & industries. It is an integrated program of data collection and development of a database to provide a comprehensive quality frame in terms of coverage and a set of stratification variables such as industrial classification, revenue, number of employees, total assets etc. For this purpose, BBS has taken an initiative for Designing, Development and Implementation of centralized online web-based Business Register System for Data Entry, Processing, Analysis, Management, Monitoring, Reporting and Server Commissioning of Statistical Business Register System.

2. The main objectives are:

- To develop a centralized online web-based central repository of information on businesses & industries of the country.
- To generate business and economic statistics on different types of activities instantly;
- Ensuring availability of consistent data of business entities;
- Ensuring availability of consistent data of economic activities by location;
- To provide disaggregated statistics on various economic activities down to Mauza level;
- Providing timely, reliable, accurate and detailed data on the size and distribution of economic units by different categories.
- Ensuring instant availability of important data for the framework of GDP, input & output measures, production & price indices and other statistical areas to measure the short-term changes in the economy.
- Historical report generation;
- generation of customized report based on available data;
- To provide a consistent benchmark data for rebasing and updating the national accounts aggregates and other economic measures of the country;
- To observe economic activities performed by the business entities by auto-generated interactive graphs, charts through dashboard;
- Facilitating evidence-based policy making and planning;
- Preventing loss of information on businesses & industries due to any disaster.

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3. Scope of Work:

Item No	Name of Item or Related Service	Technical Specification and Standards
(1)	(2)	(3)
1	a) Design, Development and Implementation of centralized online web-based application software for data entry, processing, analysis, management, monitoring, reporting and server commissioning of Statistical Business Register System (Input System)	**Software Specification and Features** 1) Software shall be Centralized and Web-based solution; 2) Software shall be hosted at BBS Server and linkage with BBS website (www.bbs.gov.bd); 3) Front-end shall be open source (preferably HTML, PHP and JavaScript); 4) Back-end shall be Oracle 11g/12c (Central Database) at BBS headquarter; 5) Have to support cross-browser platforms (popular web-browsers such as Internet Explorer, Mozilla Firefox, Opera, Chrome etc.); 6) Have to be optimized to use less network traffic/bandwidth; 7) Business entities' data shall be entered on the basis of Geographic location of Bangladesh (Geo-code wise); 8) Specification of input data structure shall be provided once the project is awarded; 9) There shall be the scope of Unicode Bangla and English typing (text & integer); 10) Must have User Creation and Privilege Set-up Option for System Admin (Admin role will have to create & have to deliver); 11) Have to integrate with Large Scale Databases of Different Organisations like BBS, Business Associations, National Board of Revenue (NBR), Election Commission, Registrar of Joint Stock Companies and Firms (RJSC), Union Information and Services Centre (UISC), City Corporation and other sources as and when required.
	b) Data Analysis and Reporting (Output System)	1) Must have the scope of data validation, error checking & correction and data analysis; 2) Must have the scope of database Snapshot creation option to generate any historical report from the system at a particular point in time. 3) Must have the scope of different types of analytical report according to the requirement; there shall be options of generating customized reports based on available data.
	c) Business Register Database Creation	1) Have to install and commission the Oracle RDBMS 11g/12c in two (02) blade servers and develop required database for the Business Register System in Oracle 11g/12c RDBMS.
	d) Two (02) Blade Servers	1) Have to Supply two (02) blade servers (Annexure: I) including Red Hat Linux (latest version) Operating System compatible to Oracle 11g/12c RDBMS.
	e) Optical Fibre Link and Real IP	1) Have to provide 5 Mbps underground optical fibre link for 18 months from the date of commencement including two (02) real IPs; But the service may be requested by the client before or after the stipulated time.
	f) Bandwidth Manager and load balancer	1) Have to supply a bandwidth manager and load balancer as required (Annexure: II);
	g) WiFi Zone Creation	1) Have to create a WiFi zone at Project Office, Economic Census 2013 Project, Parishankhyan Bhaban (Level-8, Block-B) using the 5 Mbps underground optical fibre link supplied by the consultant as per ToR. The WiFi zone shall be approximate ten thousand (10000) Square Feet.

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(1)	(2)	(3)
	h) Any supporting hardware and software (if required)	1) Have to supply any equipment/tool (small/big) and any application/utility/anti-virus/required software to run the system and for the total complete solution.
	i) Delivery System	1) Delivery will be 3 phased: a) Phase-1: i. Installation, testing & commissioning of two (02) Blade Servers at BBS HQ; ii. The complete Business Register Software (all modules) including integration facility with different databases will be delivered, tested and implemented; b) Phase-2: Data entry/import, data validation, error checking & correction, processing and data analysis will be done; c) Phase-3: All types of Reports will be done and delivered; 2) Original Source code will have to deliver in two media, i.e. softcopy in DVD media & Hardcopy like printed book; 3) User manual, operational & administrative manual will have to provide in two media, i.e. softcopy in DVD media & Hardcopy like printed book; 4) Design Documents like ER Diagram, data flow Diagram, system flow diagram, Gantt chart, etc. will have to provide in two media, i.e. softcopy in DVD media & Hardcopy like printed book. The total assignment shall be completed within Eighteen (18) months from the date of commencement of service. Time duration for the phases as below: Phase-1: 6 Months Phase-2: 9 Months Phase-3: 3 Months But the service may be requested by the client before or after the stipulated time.
	j) Training	1) Have to provide user training for 600 users for three (03) days including user manual, training kits, refreshment & lunch @ Taka 400.00 and training allowance @ Taka 700.00 per day in phase-1; 2) Have to provide user training for 100 supervising officers for three (03) days including user manual, training kits, refreshment & lunch @ Taka 400.00 and training allowance @ Taka 1000.00 per day in phase-1; 3) Have to provide operational training for 50 advanced users for five (05) days including user manual, bag, training kits, refreshment & lunch @ Taka 500.00 and training allowance @ Taka 1000.00 per day in phase-1; 4) Have to provide technical/advance training for 20 users for five (05) days including user manual, bag, training kits, refreshment & lunch @ Taka 500.00 and training allowance @ Taka 1000.00 per day in phase-3; 5) Have to arrange high-level supervision and monitoring for 10 high level officers for five (05) days including daily allowance @ Taka 7000.00 per day in phase-1;

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Item No	Name of Item or Related Service	Technical Specification and Standards
(1)	(2)	(3)
	k) Support	1. All kinds of supports to run and maintain the system for the period of 6 months after completion of the project.
	l) mode of financing	1) Ten (10) percent of the lump-sum Contract Price shall be paid upon submission of the Inception Report duly accepted by the Client; 2) Forty (40) percent of the lump-sum Contract Price shall be paid upon submission of Phase-I completion report duly accepted by the Client; 3) Thirty (30) percent of the lump-sum Contract Price shall be paid upon submission of Phase-II completion report duly accepted by the Client; 4) Rest twenty (20) percent of the lump-sum Contract Price shall be paid upon submission of Project completion report duly accepted by the Client.

4. Functional Requirement of Business Register System

User & Role Management

The business register system shall be web-based system with a role-based access control model applied to it. This is a model where permissions are associated with roles, and users are made members of appropriate roles.

For managing users and the roles for them, as well as other administrative settings, system have an Administration Center, which will act as a backend module for system administrators for managing the following settings:

- User Accounts – this section will allow for managing user accounts, creating new users, recovering, unblocking and disabling the existing users.
- Groups and Permissions – this section will allow for defining user groups and access permissions for each group.
- System Settings – this section allows for configuring SMTP settings, incorrect password attempt and user blocking settings.
- Sessions – this section will be used for monitoring active user sessions.
- Data Management – from this section, changes to the system classifiers, such as the content of the drop-down lists across the system can be managed.
- Administration Center will be used by BBS administrators.

Reporting System

The system shall offer a variety of predefined reports for all user groups and public users. Tabular and graph reports, as well as interactive dashboards should be available in the system.

It shall be system administrator's responsibility to manage the pre-defined reports. For this purpose, system should be equipped with a user-friendly report designer, which will allow administrative users for designing and saving new tabular reports, charts and dashboards. The created reports will be assigned to the specific user groups by making them available for viewing, exporting and printing.

The system shall have a capacity to create and publish unlimited number of reports for each user group. The reports should be exported into PDF and Excel formats, shared via email or in popular social networks, or published on the BBS Portal.

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In order to avoid unnecessary overloading of the system during working hours, the refresh period for each report will be configurable by system administrator. This will allow for defining the refresh periodicity for large reports (instantly, daily, weekly or monthly).

User Interface and Labeling

All the labels in the user interface shall be appear both in English and in Bangla. The default label and data should be in English. When the user clicks on 'Bangla' all the label and corresponding data should appear in Bangla.

Network Security:

The system shall use SSL encryption based on https protocol. Public-key encryption methods are used as part of SSL encryption and are expected to be part of the System.

Login security:

The security of the system shall be built in by a combination of Login Identification and passwords. The security shall be provided at the Operating System Level (Level 1), Application Login Level (Level 2) and at the Menu/Program Execution Level (Level 3), and are user definable.

System Security:

The system shall be completely secure and foolproof with incorporation of industry standard proven data encryption techniques and methodologies. Implementation of Secure Socket Layer (SSL) is must. The firm is expected to procure SSL certificates on behalf of the BBS and implement in the system. The system shall be designed and developed properly to handle following security issues.

- Access Rights for user
- Protection against data loss
- Data Transfer
- Concurrent Issues
- Protection against unintended user action
- Protection against threats – SQL injection, Cross Site Scripting, Cross Site Request Forging etc.

Scalability:

The system architecture shall be scalable to meet and integrate with future requirements. The architecture should be modular to adopt such changes and modifications as deemed necessary.

Sizing, Performance, load testing and Scalability

- The system must support 100 concurrent users and deliver a response time under 3 second for normal screen transaction processing.
- Data shall be stored for ten (10) years – vendor is expected to size the storage specifications accordingly.
- The system processing shall be scalable to support the volume estimates for a period of 10 years
- The consultant must conduct a load testing taking above factors into consideration and submit a load testing results.
- The database architecture should be such that the system is available to users 24 x 7 x 365 days a year without any unapproved down-time.
- Page load time, login response-time, „on-click" load time for the portal should be less than 3 seconds when the online system is accessed over the intranet.

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- Average transaction response time, „on-submit" response-time, or any other database access/ search time should be less than 5 seconds when the system solution is accessed over the intranet.
- Given the network infrastructure challenges in Bangladesh, the solution must support low bandwidth and "near-no" bandwidth conditions for the services defined in the functional requirements.
- The proposed solution should be highly scalable to accommodate current and future requirements within the scope of the current program.

Business Continuity
- The consultant shall assess and determine potential losses due to accidents or disasters in infrastructure.
- The consultant shall implement plans and strategies to deal with the issue of contingency planning, deciding whether a contingency plan or business continuity plan is appropriate for the system.
- The consultant shall develop hardware and software strategies to achieve the best recovery arrangement for IT systems;

Interoperability & Data Exchange
- The system shall be designed for interoperability using industry standard protocols.
- All imported data must undergo data validation to ensure full integrity. Interfacing shall facilitate the full conversion of electronic data files into the required format for the Business Register system solution.
- Data exchange within the system at different levels via the internet shall be encrypted.
- The system shall have a functionality to exchange data with other relevant databases in other external institutions such as with national id database in a most secure environment through a standardized data exchange protocol designed, developed and implemented.
- The system shall have functionality to export/import files based on the standard template defined through web services and/or API.
- The system should be able to maintain the log of such data imports being performed by the authorized users.

System Audit:
- The system shall maintain an audit trail of any changes or updates made in any information that are considered vital and if made should maintain the audit log with information such as
  o Log the users who are accessing the system
  o Log the parts of the application that are being accessed
  o Log the fields that are being modified
  o Log the results of these modifications
  o Log attempted breaches of access
  o Log attempted breaches of modification rights
  o Timestamp.
- Ensure an audit trail is kept for all transactions and all audit transactions logged are kept on the database.
- Ability to generate system audit reports.

Data Backup and Disaster recovery: Describe if required
- The vendor's solution must provide for full backup, recovery and restore facilities for the database within the overall solution to enable complete file restoration and recovery.

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- Backup solution must provide the facility to back up data and application software using modern back-up tape library technology.
- The Portal database environment must support the capability for replication of the database and libraries to the Disaster Recovery center.

UI/UX

The main system shall be a web based that should work over the intranet/internet. The system shall provide a user interface which is highly user friendly, easy to navigate and ensure fast loading of interface; The system shall include formal and logical error checks and validations to ensure the data integrity and quality. All the labels in the user interface should be appear both in Bangla and in English. The default label and data should be in English. When the user clicks on 'Bangla' all the label and corresponding data should appear in Bangla.
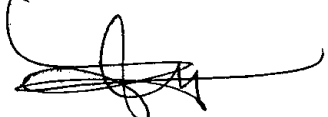
Other Deliverables:

- **Project inception report**: Provides, at a minimum, consultant's overall plan for completing the project, describes the manner in which the consultant's team will work; provides a timeline for project execution including dates, resources, and dependencies; provides a plan for communications/issue resolution, and agreed technical requirements.

- **Project Plan Document:** Develop detailed master plan with timeline for deliverables; detailed and approved functional and technical requirements; Software and deployment architecture, including the reporting platform criteria selection on which the system will be monitored for performance; risk and mitigation plan; and contingency plan in case the system fails to perform as per expectations.

- **Project Implementation Reports:** Periodic reports on the progress of the system development and piloting/rollout activities. This can be done quarterly after contract signing.

- **System Design Document (SDD):** Provides a detailed description of the underlying system architecture of the proposed systems including table structure, data dictionary, entity relationship diagram (ERD), object model etc.

- **Handover software with complete source code:** Provides a complete source code and file of the application software and any other related bespoke application software.

- **Operational acceptance test plan:** Provides a narrative of the approach that will be used to obtain user acceptance of the developed systems as well as test scripts that will be used to verify application operation.

- **Technical documentation:** Provides a description of the system architecture, module integration points, work flow engine, data dictionary, user manual etc. And any other technical material the technical team will need to understand and support the system in a longer run.

- **Training materials:** Copies (and electronic) of handouts, manuals, power point slides and any other materials used prior to conducting training to staffs at various levels. Use manual & training manual should be in both language (Bengali & English)

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- **Project Completion Report:** This shall be the entire process of the system development and implementation document, status of capacity development endeavor and recommendation of further enhancement of the system quality and effectiveness.

- All the documentation deliverables must comply the following:
  - 1 copy in English language in hard copy
  - 1 copy in CD/DVD media as softcopy

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Annexure-I: Specification of Blade Server

Supply, Installation, Testing & Commissioning of Blade Server the following configuration (Only 2 Two Blade Servers with KVM cables) have to be supplied. Other items (1. Chassis, 3. Storage and 4. Rack) only for reference associated with the blade servers.

Sl No	Name of Goods & Items	Specification and Standards
1	Chassis:Blade Server	Chassis:Blade Server
	Brand	Dell
	Model	Poweredge M1000e
	Type	Blade Server
	Country of origin	USA
	Country of Assemble	Malaysia
	Blade Chassis	Solution to house the required number of blade servers in smallest number of enclosures. Support for full height and half height blades in the same enclosure holding upto 16 half height blade servers / 8 full height blade server per enclosure occupying a max of 10U rack height.
		Same enclosure should support Intel Xeon Option based blades
		support simultaneous housing of Ethernet, FC, FCoE, iSCSI, IB interconnect fabrics offering Hot Pluggable & Redundancy as a feature
		Would be able to perform comprehensive system data collection and enable users to quickly produce detailed inventory reports for managed devices. Software should save the Reports for further analysis.
		Provision for a single console to monitor multiple enclosures
		Support simultaneous remote access for different servers in the enclosure.
	Supported Interconnect Module	Support for at least 3 redundant interconnect bays with support for Ethernet, FC, IB fabrics. Modules should be of the same brand as the blade server supplier
	Power Supply	The enclosure should be populated fully with power supplies of the highest capacity available with the vendor. Power supplies should support N+N as well as N+1 redundancy configuration, where N is greater than 1
	LAN interconnect Switch	Redundant LAN Interconnect Switch with the following features: Includes up to 8 external LAN ports using four fixed SFP+ ports and one FlexIO modular bay supporting 4 additional SFP+, 10GBASE-T, or CX-4 ports for diverse connectivity
	FC Interconnect Switch	Redundant FC Interconnect Switch with the following featurs: 8Gb Fibre Channel Switch, Includes 8 external SAN ports
	Cooling	Each blade enclosure should have a cooling subsystem consisting of redundant hot pluggable fans or blowers enabled with technologies for improved power consumption and acoustics
	Management software	Management/controlling software's have to be from the OEM itself.
		Software Licenses for a fully populated Blade Enclosure should be given.
		The software should provide Role-based (admin, user, operator, etc) security which allows effective delegation of management responsibilities by giving systems administrator's granular control over which users can perform which management operations on which devices.
		Preferable: Povide proactive notification of actual or impending component failure alerts. Should support automatic event handling that allows notification of failures via e-mail.
		Support scheduled execution of OS commands, batch files, scripts, and command line apps on remote nodes
		Would be able to perform comprehensive system data collection and enable users to quickly produce detailed inventory reports for managed devices. Software should save the Reports in some format for further analysis.

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Sl No	Name of Goods & Items	Specification and Standards
		Would help to proactively identify out-of-date BIOS, drivers, and Server Management agents and enable the remote update of system software/firmware components.
		The server performance monitoring software should be able to detect, analyzes, and explain hardware bottlenecks. Also it should be able to log the data over time and allow it to replay the same in a short time frame for performance analysis.
		Deployment software: User friendly GUI/ console-based deployment to set up and install multiple OS and application configurations in individual blade server.
		Comprehensive web enabled system management tool that monitors the system health, environment, critical action etc, With its own data engine to store status reports, alerts and error notifications , Complete Administration of the blade enclosure from a standard web-browser With event logging, detailed server status, alert forwarding, Remote graphical console, remote power control / shutdown, virtual floppy and CD for remote boot and configuration, virtual text and graphical control, automatic IP configuration via DHCP/DNS/WINS with 128 bit SSL encryption security. The blade system should have the capability of managing all the blades in the Enclosures simultaneously capable of monitoring both physical and virtualized environments with single sign on capability for all devices in the enclosure
	DVD RW Drive	The Blade Chassis would have at least one Optical Drive
	Warranty	3 Years full warranty
2	Blade Server	Blade Server
	Brand	Dell
	Model	PowerEdge M630 or Equivalent
	Country of origin	USA
	Country of Assemble	Malaysia
	Chip set	Industry Standard Intel® C610 Series Chipset or Equivalent
	Processor	Intel Xeon E5-2600 v4 product family or equivalent
	No. of Processor	2x8 Core or higher
	Clock Speed	2.6GHz (each) or higher
	Cache Memory	20 MB L3 Cache per processor or higher
	Memory (RAM)	64 GB DDR4 2400MHz RDIMMs Expandable up to 1.5TB
	NIC	2X10Gig, HBA: Qlogic 2562, dual-port 8GB, Optical Fibre Channel HBA
	HDD	2 Nos. x 1.2TB 10K RPM min. Hot plug SAS drives
	RAID Card	RAID Card with 512MB Battery Backup Cache and would be supported RAID 0/1
	I/O Slots	2 x PCIe 3.0 (x8) mezzanine cards
	Operating System	MS Windows Server 2008 R2, 2012, 2012 R2/Red Hat Enterprise Linux
	Warranty	3 Years full warranty with spares and service
3	SAN Storage	SAN Storage
	Brand	Dell
	Model	Compellent SC8000
	Country of Origin	USA
	Country of assembling	Malaysia
	Interface	8Gb FC Ports
	Block Level Virtualization	The SAN will provide block level virtualization of all drives within the SAN
	Space Utilization	The SAN will not pre-allocate space based on RAID or snapshot functionality

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অর্থনৈতিক শুমারি ২০১৩ প্রকল্প

মোঃ দিলদার হোসেন
প্রকল্প পরিচালক
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SI No	Name of Goods & Items	Specification and Standards
	Platform Supportability	The SAN will support any server interface, operating system, or drive technology, running in a combined simultaneous environment, or an exclusive environment.
	Redundancy & Serviceability	Individual hardware components must be fully redundant and hot-swappable to ensure maximum data availability. This includes storage controllers, disk drives, power supplies, fans and power cords.
	Automatic Space Allocation	SAN must automatically reclaim available space in a Windows application
	Downtime	The SAN will allow RAID levels to be changed on the fly without taking down the server to which the volume is attached
	Technology Support	The SAN will support FC and iSCSI, FC, SAS and SSD drives on the same platform
	Remote Replication Nature	The SAN will support synchronous, asynchronous replication. Further, the replication must be bi-directional to support multiple replication options.
	Remote Replication Ability	The SAN will support remote replication to multiple locations without third-party hardware and/or software.
	Universality	The SAN will allow remote and local sites to be of different hardware/software configurations.
	Data Path	Every volume of data will be presented to the SAN without special consideration for the data path, and data volumes must be able to be moved between different data paths
	Connectivity Type	The SAN will allow any LUN provided to a system configured with both types of server connectivity (fiber channel or iSCSI) and must be capable of mapping volumes from one connectivity type to the other without changing or copying the data
	Host/server Support	The storage system will support unlimited number of servers/hosts.
	Multi-generation Support	Should have persistent hardware architecture for no forklift upgrades, so that future generation storage models can be easily integrated into the existing system to ensure capital expenditure
	Number of Storage Controllers	2 per system
	Cache Details	Dual Controllers with 16 GB cache per controller or 32 GB per storage system. Cache will be mirrored across controller.
	Controller Clustering	Will be able to cluster storage controllers to increase system availability and performance. High-speed mirrored, write-back cache to prevent data loss is required.
	Supported Drives	SSD, FC, SATA, Near line-SAS and SAS drives. Different drive types, transfer rates and rotational speeds can be mixed in same system. The storage system should support automatic tiering.
	RAID Support	Will support RAID 0, 5, 6 and 10; Any combination of RAID levels will exist on a single SAN; Multiple RAID levels will exist on the same storage tier within an array
	Storage Array Configuration & Capacity Requirement	Minimum 5TB of usable space with RAID10 using 600GB 6Gbps SAS 15K RPM Hard disk drives.
	Storage Scalability	Each system should support 500 FC/SAS/SATA drives in the storage array
	Centralize availability	Will manage disks as a single pool and present disk resources to any server.

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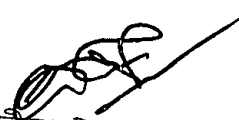| SI No	Name of Goods & Items	Specification and Standards
	Port Performance Enhancement	Will increase port capacity, disk bandwidth and I/O connectivity while enhancing failover.
	Disk Optimizer	Will intelligently restripes data as disks are added to optimize performance.
	Application Optimizer	Can set the size of data transfers within the SAN to match I/O performance for different applications.
	Volume features	Will be able to make copies or mirrors and migrate volumes without impacting users.
	Heterogeneous OS	Will support any number of simultaneous operating systems.
	Boot from SAN	Can allow diskless servers to share storage resources and boot from the SAN.
	LUN Masking	Will hide unassigned LUN/ID numbers for secure storage domains.
	Performance Monitoring	Can generate real-time reports to identify and optimize performance and utilization.
	Unified User Interface	Will have enterprise-level functionality through a common intuitive user interface.
	System Administration	Can be operated from any standard browser. Create unique user profiles with administrator configured privileges.
	Remote Monitoring	Can remotely report status and automatically trigger service responses.
	VMware SRA for SRM	Will have plug in for VMware Site Recovery Manager and Sphere for future virtualization adaptability.
	Local snapshot	Will create space-efficient Replays/snapshots that can restore data instantaneously while ensuring the integrity of enterprise application data spanning multiple volumes (Consistency Groups).
	Thin Provisioning	Will have an option to allocate space based on actual data written.
	Management	Comprehensive monitoring, reporting and management.
	Power Supply	Redundant Hot Swappable Power Supply (Please mention the wattage)
	Warranty	3 Years full warranty with spares and service
4	Server Rack	Server Rack
	Brand	Dell
	Model	Poweredge Rack 4220
	Country of Origin	USA
	Country of assembling	Malaysia
	Description	Size - Compatible with Chassis/42U
		Depth -1000 mm
		4 x Basic PDU with power cord
		Fan Kit
	KVM Switch	Dell 2162DS, 16-ports Digital KVM Switch Enterprise Class, Digital 16-port IP KVM
		Dual independent local port video paths (one dedicated to ACI for tiering);
		Agent less control and access for 1 remote users;
		Dual Gigabit Ethernet ports for redundancy;
		Dual stack IPv4 and IPv6 for simultaneous access;
		Modem connection for access to switch when Ethernet is not available;
	Consol Monitor	Same Brand as Rack, Enterprise Class
		17" Rack Console (17" LCD with 1U Tray and RapidRails)
		Space-saver server Keyboard with Touchpad, USB plus PS/2 connections
	Power Supply	Redundant Hot Swappable Power Supply (Please mention the wattage)
	Warranty	3 Years full warranty with spares and service

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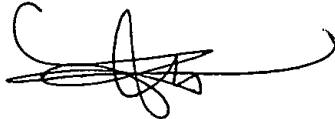অর্থনৈতিক শুমারি ২০১৩ প্রকল্প

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Annexure-II: Specification of Bandwidth Manager and Load Balance Management System

Supply, Installation, Testing & Commissioning of Bandwidth Manager and Load Balance Management System:

Sl. No	Name of Goods & Items	Specification and Standards
1	Bandwidth Manager	
	Processor Speed	680 MHZ or above
	Brand	MIKROTIK or equivalent
	Product Code	RB-450G or equivalent
	Memory	Minimum 256 MB RAM
	LAN Ports	5 (Gbit LAN)
	Description	ROS Software
	User	50 to 100 user.
2	Load Balance Management System	
	Specification	As required

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