

Section-6: Terms of Reference

Terms of Reference

Background

Bangladesh Road Transport Authority (BRTA) is a regulatory body under Road Transport and Highways Division of the Ministry of Road Transportation & Bridges. It is responsible for registration of motor vehicles, inspection of vehicles for issuance/renewal of fitness certificates, route permits, motor driving licenses, conductor license, tax token, issuance of Instructor license, registration of driving school, issue/replacement of digital number plates, issue/replacement of digital registration certificate etc.

The services related to Issue of Registration, Issuance/renewal of Fitness Certificate, Ownership change, modification of vehicles etc. involve inspection of vehicles for compliance with the Standard under the prevailing law. For issuance or renewal of fitness certificates, it is mandatory for a vehicle to go through fitness check-up every year and have its fitness certificate renewed to ply the roads legally. Bangladesh Road Transport Authority is the sole Authority to inspect the vehicles and provide the fitness certificate. Currently, there are more than 1.6 million various types of vehicles which need yearly fitness inspections. Bangladesh Road Transport Authority currently engages its personnel designated as Motor Vehicle Inspection (MVI) to visually check each and every vehicle and issue/renew the fitness certificate.

Objective:

The number of vehicles are increasing day by day and hence it is required to increase the level of standard support for ensuring the quality of the service. Presently proper queue management is not being maintained, as a result, the process has become inefficient. For lack of sufficient manpower and lack of modern sophisticated machineries for vehicle testing, the applicant needs to wait for long time to receive the Fitness Certificate (FC) without knowing the current status of vehicles. Moreover, BRTA offices haven't adequate space to run the operation smoothly. Without refining existing issues, this process will fail to provide standard citizen service, hence it is imperative to automate the manual process and bring the mentioned service under one umbrella.

BRTA now demands a complete solution that will significantly improve the citizen service experience regarding issue of Fitness Certificate (FC).

The new system should provide queue management, vehicle test accuracy and faster processing abilities. The process must be automated and digitized with a centralized system in place maximizing efficiency. This solution is expected to promise a smooth operation of BRTA services, overcoming current bottlenecks and issues of FC.

To modernize and automate vehicle inspection process, BRTA intends to engage reputed Firm(s)/Consultant(s) to setup modern Vehicle Inspection Centers at Dhaka Metro Circle-1, Mirpur and the Data Center for the VIC setup to BRTA Head Office and also integrate it with present BRTA-IS, Online Banking Software, Digital Number Plate System and as required system application and maintain the system for 5 (five) years.

Scope of services:

Currently BRTA has head office in Dhaka, 62 circle/field offices and 7 Regional/Divisional offices throughout the country. BRTA has been maintaining a true online database of registered motor vehicles and motor driving licenses.

Presently there are 04 (four) contracts running in BRTA in IT sector. These are:

- (1) BRTA Information System (BRTA-IS) for registration, fitness, route permit etc. services;
- (2) Motor Vehicle Tax & Fees collection through online banking system;
- (3) Smart Card Driving License System;
- (4) Retro-Reflective Vehicle Number Plate and Radio Frequency Identification (RFID) System;

The Software and hardware used in the above contracts need to be integrated with Enterprise Resource Planning (ERP), Web Portal, IT infrastructure etc. and a newly established project titled "Establishing Data Center and Web-Portal System for Digital BRTA".

The service provider shall have its sole local agency from a reputed VIC equipment manufacturer with at least one fully functional working office in Dhaka, Bangladesh.

The following are the broader components of the supply, installation, setup, integration operation & maintenance of Vehicle Inspection Centers. The tasks to be performed, but not limited to the followings, are:-

1. Development of the Computerized Automated Vehicle Inspection System and Supply, Installation, commissioning, Operation, Maintenance and Support Services and Integrate the System with existing BRTA-IS for 5(five) years;
2. Install, Maintain and Support Service of Wide Area Network (WAN) and LAN which will keep all Terminal of VIC real time On-line from all the offices of BRTA countrywide;
3. Provide, install and maintain Intranet connection at around 70-75 different geographic locations of BRTA offices including BRTA HQ and LAN/WAN connection to all PCs used in those offices through Fiber optics cable or wireless modem or broadband connectivity;
4. Approval System of Vehicle Inspection Certificate;
5. Generate customized reports instantly from database as per requirement of BRTA from time to time;
6. Provide and assign full time professional personnel to required VIC testing Lanes/Centers/BRTA Offices to perform the assignments accordingly;
7. Provide theoretical and practical training to all motor vehicle inspectors(MVIs) and nominated/selected officials of BRTA for capacity building relating to testing equipment, machinery and hardware at VICs for fitness testing and issuance of fitness certificates after 04 (four) weeks from the commencement of the contract agreement.

The following details are to be complied by the service provider for all components mentioned above:

1. The Vehicle Inspection Center shall have multiple test lanes (minimum 6 heavy and 6 others test lanes) fully automated with test equipment. At least two simultaneous testing operations must be supported. There must be separate test lanes for light vehicles and Heavy Vehicles including trucks and buses. **The Service Provider must include in their proposal, a detail work flow, vehicle inspection manual and capacity matrix of their proposed Vehicle Inspection Centers.**

2. The Service Provider shall arrange for requisite manpower, equipment and necessary power, network & other facilities. The Vehicle Inspection Center must be connected with BRTA-IS, Online Banking System, Digital Number Plate System and others System required by the BRTA and Ministry in real time and there must be facility for BRTA inspectors to issue fitness certificates as a “one stop” solution.
3. The Service Provider must setup and maintain separate Data Center in BRTA Head Quarters and Dhaka Metro Circle -1 respectively for hosting real time online web based Vehicle Inspection System and storing the database of each and every automated test performed in the Vehicle Inspection Centers.
4. Service Provider should setup a VPN connection for backup of VIC (Database and application) system in BCC Data Center for performing Disaster Recover.
5. To establish and maintain redundant point to point VPN based fiber optical connectivity between all Data Centers and Disaster Recovery Center.
6. To provide Fiber Optic / Wireless intranet connectivity in the data center with required bandwidth to connect each Vehicle Inspection Center with the BRTA-IS and other BRTA database as required to enable issuance / renewal of fitness certificates.
7. The Original Equipment Manufacturer must have professionals/representatives in Bangladesh to setup, install and maintain the Vehicle Inspection Center.
8. To maintain the service level and quality of services across entire system in VIC and ensure public satisfaction at the highest level possible.
9. To ensure redundancy at each level to prevent disruptions during normal working hours and ensure safety of data, quality of test parameters and physical infrastructure to avoid errors and public dissatisfaction.
10. The system shall have compliance with the Information Security Policy Guidelines-2014, ICT guideline 2018 and Govt. relevant rules and regulations.
11. To maintain the VICs including all its components for a period of 5 (five) years and any subsequent extended time if awarded.
12. In developing period the Service Provider should take approval of all types database design and applications logics of the AVIS system from BRTA. Any change and update throughout the contract period should take approval from BRTA. RTHD and BRTA Technical (nominated) officials should have access of database, source code and applications.
13. The Application Server must be any of the following:-
 - Oracle Web logic.
 - Apache Tomcat.
 - Zend Enterprise Server with Java Bridge.
 - Apache HTTPD with Clustering Support.
 - Or Equivalent Technology.

14. The VIC Software System shall have encryption at database and application level to prevent any manipulation of data after saving. The System should have maintain all kind of Cyber Security measure.
15. The VIC System must produce & store required level of access, usage, error, record manipulation and process logs including all type of audit logs to enable the technical auditors, BRTA officials, RTHD Officials to audit the system at any given time providing them with clear idea on the usage and processes performed by the system at detail level.
16. Yearly IT audit must be performed. IT auditor firm will be selected by BRTA.
17. The VIC system must have features to automatically derive resulting reports based on the standards specifications and rules of BRTA. It should also make use of the historical information of vehicle's past inspections performed earlier to derive historical reports. The Service Provider shall accommodated rules/regulations.
18. The VIC System must print prescribed result report along with barcode to be provided to the customer to circumvent the possible forged reports, the inspection report shall contain certain security serial numbers harder to reproduce in common printers. The features shall be set with mutual agreement with the service provider during the formulation of contract.
19. Each inspection must generate unique e-tracking number which must appear clearly on the inspection report and shall be able to be verified from internet portal as well as the dedicated terminal of the Assistant Director (Engg)/ADE and Motor Vehicle Inspector (MVI) of the field offices. In this connection, the Service provider shall provide the network to the terminal and install required software (if any) to be able to access the Vehicle Inspection system and verify the inspection reports using various key words including but not limited to vehicle registration number, e-tracking number, chassis number and Name of the owner etc.
20. The system must accurately assess the road worthiness of all types of vehicles as per the directives of the BRTA and Government.
21. The vehicle inspection system must produce all required reports on day wise, month wise district wise, circle wise, year wise inspections and also customized dynamic report or as per required by BRTA.
22. The Service Provider must commission and install all required hardware, Operating System, Network, Software, Power Backup and Printing Equipment at workstation, Data Center and DRS as well as full-fledged inspection centers within 9 (nine) months of agreement.
23. All the hardware, software network and equipment used by the Service Provider for the Vehicle Inspection Center shall be the property of BRTA. Also the software applications, data and/or the Information of all inspections, vehicles, reports, charts and figures shall be the property of BRTA and shall be handed over to the BRTA in any prescribed format requested by BRTA after successful completion of the work in fully operational mode.
24. In case BRTA notices considerable changes in volume of fitness, the Service Provider must have arrangements to dedicate more inspection centers in specific locations requested by BRTA.
25. The Service Provider shall be paid service charge at the rate of its quoted price per inspection;

26. The rates quoted by the Service Provider shall remain fixed for the entire duration of the contract which is 5 (Five) years from the date of "Go Live" of the service. The same rate shall be fixed and applicable for any subsequent extension of the contract also;

27. The estimated number of vehicles to be inspected for fitness test are indicative and shall be used as the base for evaluation of the financial proposal.

28. The Service provider shall have to provide on-job training to BRTA personnel, for operation and maintenance of VIC facilities.

29. Clients right to visit Service Provider's Office in Bangladesh and abroad:

The Client deserves the right to visit, at any office time, SP's office including Sub-service providers to oversee the activities being performed by the SP, partner institutions and associates for this assignment including the infrastructures being used for this purpose.

30. **Institutional arrangement:** For better performance of the assignment, monthly coordination meeting will be held between the Client and the Service Provider. A coordination meeting will also be used among the Client, Service Provider and Sub-service provider banks in every three months. Urgent meetings may be held at any date at the Client's desire, if necessary.

31. **Issuance of Fitness Certificate (FC):** As per Motor Vehicle Ordinance 1983 and/or Road Transport Acts 2018 (সড়ক পরিবহন আইন ২০১৮) a Fitness Certificate (FC) is required for all sorts of registered vehicle except motor cycles. The system must also verify automatically the payment (AIT, Tax, Fitness fee, others) for Fitness Certificate (FC) from a separate system called 'online tax & fee collection system', where the payment records are maintained.

32. **Vehicle Test:** The tests are carried on sequentially as mentioned below:

A. Manually Test:

✓ Interior checks (1st step):

- Seats and seat belts;
- Warning lamps;
- Switches (position lamp, headlamp, hazards);
- View to front, wipers & washers;
- Brake controls , servo operation;
- Steering wheel & column;
- Doors, mirrors, horn;
- Speedometer, driver controls;

✓ Exterior checks (2nd step):

- Registration Number Plate;
- Lamps,
- Indicators, hazards;
- Headlamps & aim;
- Stop lamps, fog lamps, reflectors;
- Wheels, tyres;
- Shock absorbers;
- Mirrors, wipers blades, fuel tank cap;
- Doors, boot lid, loading doors, bonnet;
- General condition of body/body colours etc.

- ✓ Under bonnet checks (3rd step):
 - Vehicle structure ;
 - Braking systems;
 - Exhaust system, fuel system;
 - Steering & power steering components;
 - Suspension components;

- ✓ Under vehicle checks (4th step):
 - Steering including power steering
 - Drive shafts;
 - Suspension, shock absorbers;
 - Wheel bearings;
 - Wheels & tyres;
 - Brake systems & mechanical components;
 - Exhaust system;
 - Fuel system & fuel tank
 - Structure, general vehicle condition

B. Automatic test in VIC:

- Head Light Test (1st step);
 - High beam: luminous intensity, optical axis deviation
 - Low beam: luminous intensity, optical axis deviation

- Smoke Test (Exhaust) (2nd step):
 - CO, HC concentration value;
 - CO, HC & NO concentration;
 - Random acceleration Exhaust contamination value;
 - Light absorption coefficient
 - Sound Level Test (Horn value & level);
 - Speedometer Test (accuracy of vehicle speedometer);

- Brake Test (3rd Step):
 - Wheel (axle) load;
 - Left/Right brake balance;
 - Wheel resistance;
 - Total brake rate;
 - Wheel brake force;
 - Hand brake;

- Side Slip Test (4th Step):
 - Steer wheel sideslip value and direction;

33. **Fitness Certificate renewal:** The system shall record required vehicle tested and vehicle data as. The system should have provision to pull the personal data from BRTA-IS maintained by BRTA and another vendor. Activities connected with Fitness Certificate include but are not limited to:

- Issue of Fitness Certificate.
- Renewal of Fitness Certificate.
- Duplicate Fitness Certificate.
- Duplicate Fitness Certificate with renewal

- Change of Authority or transfer of Fitness Certificate.
 - Change (correction) of other information of Fitness Certificate .etc.
 - Recording vehicle tested information provided by the VIC.
 - As required by BRTA.
34. **Printing of Fitness Certificate.:** After completing the review process of the application by the authorized officer of BRTA, the vehicle passes VIC with various tested and it is passed or failed the required test then the record directly goes for printing and if it passed then finally fitness certificate will be printed.
35. **Delivery of Fitness Certificate:** After printing SMS and email shall be sent to each vehicle owner and also deliver the Fitness Certificate to vehicle owner or representative for the vehicle.
36. **Fitness Certificate Verification Services:** The system should also make provision for verification of Fitness Certificate from the central database through hand held device by authorized police officers all over the country and BRTA personnel and also provision for verification general public through BRTA website, SMS system or mobile application.
37. **VIC:** The supplier must design the central VIC according to required plan and designed by BRTA (enclosed Drawing).
38. **Transport Service:** The Service provider shall provide one (1) vehicle with driver to the Client for 60 months (contract period) for the project transportation purpose. The Service Provider shall bear all cost of driver, maintenance, fuel, lubricants and others for contract period.
39. **Training:** 200 officers and staff (Motor Vehicle Inspector and Mechanical Assistant) shall be trained within the first 08 (eight) months after signing the contract agreement to make them able to check the vehicle fitness test and issue the fitness certificate.
40. **Inspection of Manufacture's VIC equipment:** The contact awarded Service Provider (SP) shall arrange a visit to the manufacturer country to gather effective knowledge about the maintain and operational activities of similar VIC system management for 5 (Five) days excluding journey time of 5 (Five) participants from Client's side where 3 (three) members from proposal preparation committee included PE, Chairman of BRTA and One from the Road Transport and Highway Division.
41. The Service Provider shall engage qualified vehicle fitness inspection personnel as per the following table for operation of the system at vehicle inspection center for five years: -

Sl. No.	Particulars	Months	Persons	Man-Month
1	Team Leader	60	1	60
2	Operation Manager	60	1	60
3	Assistant Operation Manager	60	2	120
4	Security Manager	60	1	60
5	Assistant Security Manager	60	2	120
6	Security Supervisor	60	4	240
7	Vehicle Inspection Supervisor	60	4	240
8	Vehicle Inspection Operator	60	20	1200
9	Vehicle Inspection Assistant	60	20	1200
10	Network Engineer	60	1	60
11	Maintenance Engineer	60	1	60
12	Assist. Maintenance Engineer	60	4	240
13	Trainer	60	1	60
14	Security Guard	60	20	1200
15	Office Assistant	60	2	120
16	Cleaner	60	5	300
			Total=	5340

42. List of hardware, software & equipment to be supplied for the service: The Following Equipment must be supplied at the locations mentioned for each category for Hosting the Real Time Application. The Service Provider must provide full specifications of all the items listed below with necessary documentation and catalogues for evaluation. In case the Service Provider's solution requires additional equipment/hardware, it must be mentioned in the technical proposal including detail specification and catalogues. The technical proposal of the bidder must accompany detail specification of all equipment required for the project.

BRTA HEAD QUARTERS DATA CENTER:

Sl. #	Particulars	Qty	Units
1	Central Database Server	1	Nos.
2	Central Application Server	1	Nos.
3	Central Web Server	1	Nos.
4	Backup Database Server	1	Nos.
5	Backup Application Server	1	Nos.
6	Backup Web Server	1	Nos.
7	Storage with LUN Capacity (24 x 1.2 TB) HDD, Redundant Controller, Redundant Power & Auto Fault Management	2	Nos.
8	Racks (1 Network + 1 Server) with Display	2	Nos.
9	Online UPS 6 KVA	8	Nos.
10	Heavy Duty Router: Internationally reputed brand / Cisco	1	Nos.
11	Heavy Duty Switch: Internationally reputed brand 24 10/100 + 2 T/SFP	2	Nos.
12	Precision Air Conditioner (3 Ton x 4 Nos)	4	Nos.
13	Power Generator 2 x 50 KVA	2	Nos
14	Wide Area Network Installation	1	Nos.
15	VIC Management Software	1	Sets.

VIC OPERATION CENTER, MIRPUR, DHAKA

Sl. #	Particulars	Qty	Units
1	VIC Equipment Set for Heavy Vehicle	6	Nos.
2	VIC Equipment Set for Other Vehicle	6	Nos.
3	Work Station	12	Nos.
4	Report Printer	12	Nos.
5	UPS for Work Station	12	Nos.
6	UPS for Printer	12	Nos.
7	Router	1	Nos.
8	Switch	1	Nos.
9	Optical Fiber Distribution Panel	1	Nos.
10	Media Converters	2	Nos.
11	Power Generator 2x200 kva	2	Nos.
12	File Storage / Locker	12	Nos.
13	Computer Table, Chair etc.	12	Nos.
14	Air Conditioners 2 Ton	8	Nos.

43. **NETWORK REQUIREMENT (Minimum):** The following network requirements are furnished as indicative list of connectivity. The bidders shall provide a list with requisite bandwidth, connectivity speeds and modality of connection (fiber optic/wireless/cable) for the last mile.

Sl. #	Particulars	Months	Qty	Total
1	100 Mbps Data Connectivity at VIC Mirpur Data Center	60	1	60
2	50 Mbps Data Connectivity at Dhaka Circles (Total 4 Circles)	60	4	240
3	20 Mbps Data Connectivity at Chittagong Circle	60	1	60
4	2 Mbps VPN Based Data Connectivity at Other Circles for access the data from Main Server.	60	65	3900
5	Local LAN Maintenance at VIC Center	60	1	60
6	Local Hardware Maintenance at VIC Center	60	1	60
7	Local LAN Maintenance at VIC Mirpur Data Center	60	1	60
8	Local Hardware Maintenance at VIC Mirpur Data Center	60	1	60

44. **OTHER MATERIALS AND COST:** The following materials and cost may require to perform daily activities and establishment of the project.

1	Consumables (Paper, Ink, Toner)	60	Months
2	Wear & Tear of Equipment and Provision for Replacement	60	Months
3	Transport & Fuel (Vehicle and Generator)	60	Months
4	Bank & Finance Charges (Bank Interest on capital Machinery)	60	Months
5	Electricity Charges	60	Months
6	Training Costs	200	Personnel
7	Uniform Costs	5	Times
8	Mobile & Communication Costs	60	Months

Technical Specifications of Software

Software Application should be developed for the following modules but not limited to:

a. Fitness Test Result Automation

After the Fitness test has taken place, the test result recording should be automated to yield the each vehicle registration number. A vehicle may test for more than one time in a year. The tested result store and update in the system on the date and time of testing. Automated notification on result should be sent to applicant through SMS and email.

b. Online Fitness Application System

The system should allow the applicants to apply for the Fitness application online by the BRTA Service Portal (BSP) and also integrate with it. The applicant must provide vehicle information to successfully submit the application. Payment gateway should be integrated with online application system so that applicants can make payment online. . It must be integrated with payment system of BRTA to verify the payment. After submission of online application by applicant there will be a provision to verify & approval of the submitted application by Fitness Authority. Apart from applying online, the applicants should be able to apply physically from VIC as well.

c. Appointment Management System

The Appointment Management Solution already developed in BSP. The AVIS shall integrate with BSP for Appointment management of vehicle fitness.

d. Delivery Report Printer

Brand new laser printer should be used. Printer should be functioning for at least the contract period and next one year. Back up printer should be provided before the servicing of the existing printer. Delivery report will contain the necessary details of the vehicle test and its own information.

e. RFID Tag Verification

The System should have provision to check RFID Tag for every vehicle.

f. Approval

BRTA's concerned officer; inspector or any BRTA higher official must receive a notification in their dashboard to review and approve the application. A unique reference number should be generated by the system automatically per testing after approval. All the submitted hardcopies of the application and documents, within a specific period of time, will be later transported physically to BRTA office.

g. Delivery Fitness Certificate Printer

Brand new dot matrix printer should be used. Printer should be functioning for at least the contract period and next one year. Back up printer should be provided before the servicing of the existing printer. Delivery Fitness Certificate will contain the necessary details of the valid time of fitness and vehicle's own information.

h. Inventory Management System

Inventory management system will have to keep track of the blank Fitness Certificate and distribution of personalized Certificate. This module should manage the count of physical Certificate, daily and master stock. In addition to these, it must be able to track a certificate. A key function of this inventory management is to keep a detailed record of each blank or personalized certificate; the system should also have a search option using which the records can be easily accessed.

i. Administration Portal

Selected administrative users from BRTA should be able to use the administration portal to create user, assign roles, create authority and view reports, stock etc. Reports regarding various needs of the applicant must also be available in the administration panel.

j. Reporting Dashboard

A dashboard brings all data together into a single view. The reporting dashboard shall allow BRTA management personnel to generate and view a number of pre-configured and semi-customized reports on Fitness Certificate issued and renewal. BRTA shall provide the format and requirements for these reports.

k. SMS Service

There should be a provision for SMS Service to the vehicle owner where the applicants will be notified about the status vehicle testing.

I. Centralized User Management System

The centralized user management system must have role based authenticated accounts. The system has to support a password based login mechanism for application users. System will be able to manage and control the rights to access and privilege on existing resources. Only an authorized user can access the system. Admin user will have the permission to create other users or operators, assign their roles and manage services. An admin can create, edit, modify and delete users.

m. Mobile App (Fitness Verification)

The mobile app must be capable of running on standard mobile platforms such as android and IOS. Only authorized users shall be able to access the app; there must be a central user management system for this purpose.

n. Customer Rating Service

The system should introduce a service where a customer will be able to rate the overall experience. Such ratings can be used to enhance the customer service and reduce inconveniences. System should allow printing of the customer service report.

o. System Integration

The system must be integrated with the Payment management system, BSP, BRTA-IS and other as required to be able to auto verify payment for Fitness issue or renewal.

p. Application Service

Application service should be able to handle all requests from all the applicants/clients.

q. SSL Certificate

SSL certificate should be provided to ensure the web security while exchanging sensitive data.

Technical Specifications of Goods and equipment

Specifications of Items

1. Central Database Server

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand	HP/IBM/DELL
2	Model	To be mentioned by the bidder
3	Country of Origin	To be mentioned by the bidder
4	Country of Manufacturing	To be mentioned by the bidder
5	Processor	2 x Six Core Intel® Xeon® Processor E7500 series 2.0 GHz, Upgradability up to 4 processors
6	Chipset	Intel® 7500 Chipset or Higher
7	Memory (RAM)	64 GB (8 x 8GB) DDR3-1333 Registered ECC memory
8	Hard Disk Drive	5x 300GB 6G SAS 10K 2.5" Hot Pluggable DP HDD (expandable up to 8TB)
9	Storage Controller	Min. 512MB Battery Backed Cache Support and RAID Level 0,1 & 5
10	Network Interface Card	Integrated Quad Port Multifunction Gigabit Server Adapter
11	Optical Drive	DVD RW
12	Graphics	64MB video standard
13	Power Supply	4 x 1200W Hot Plug Redundant power supply.
14	System Fan(s)	4 (Four) redundant hot plug fans ship standard (3+1).
15	Expansion Slots	Up to 11 available PCI-Express Gen2 slots
16	Drive Bays	Support for up to 8 Small Form-Factor (SFF) SAS,

Sl. No.	Item of Specification	Particulars of Specifications
		Serial ATA (SATA) or SSD drives
17	Interfaces	1 x Serial, 1 x Pointing Device (Mouse), 1 x Graphics, 2 x VGA (1 front, 1 rear), 4 Network RJ-45, 1 x iLO 3 remote management Port, 1 x SD slot, Total 6 USB 2.0 Ports: 2 front, 2 back, 2 internal
18	OS Support	Red Hat/ Oracle Enterprise (64 bit)
19	Security	Power-on password, Keyboard password, Quick Lock, Network Server Mode, Serial interface control, Administrator's password
20	Form Factor	4U Rack Mountable
21	Warranty	3 Years Full Warranty with Parts and Labor

2. Central Application Server

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand	HP/IBM/DELL or Any Internationally Reputed Brand
2	Model	To be mentioned by the bidder
3	Country of Origin	To be mentioned by the bidder
4	Country of Manufacturing	To be mentioned by the bidder
5	Processor	2 x Intel® Xeon® Processor E5620(2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2)
6	Processor Upgradeability	Upgradeable to 2 processors (12 cores)
7	Chipset	Intel® 5520 Chipset
8	Cache Memory	Up to 12MB (1x12MB) Level 3 cache
9	Memory (RAM)	64GB (8x8GB) Registered using DDR3 ECC memory, Up to 192GB
10	Hard Disk Drive	5 x HP 300GB 6G SAS 10K 2.5in DP ENT HDD
11	Storage Controller	HP Smart Array P410i/256 MB Controller (RAID 0/1/1+0/5/5+0) equivalent
12	Network Interface Card	Two Dual Port Multifunction Gigabit Server Adapters (four ports total) with TCP/IP Offload Engine, including support for Accelerated iSCSI
13	DVD-RW Drive	SATA DVD RW Optical Drive Standard / equivalent

Sl. No.	Item of Specification	Particulars of Specifications
14	Graphics	Integrated ATI ES1000, 64MB video standard
15	Hot Plug Power Supply	2x 750W Hot Plug Redundant hot plug power supply.
16	System Fan(s)	Fully redundant hot plug fans ship standard (N+1).
17	Expansion Slots	Up to six available PCI-Express Gen2 slots, optional mixed PCI-X / PCI-Express or x16 PCI configurations
18	Media Bays	Standard (16) small form factor (SFF) hot-plug drive bays to support Serial-attached SCSI (SAS) and Serial ATA (SATA) drives. . media bay supporting Optical Drive
19	Interfaces	1 x Serial, 1 x Pointing Device (Mouse), 1 x Graphics, 1 x Keyboard, 2 x VGA (1 front, 1 back), 4 Network RJ-45, 1 x iLO remote management Port, 1 x SD slot, Total 5 USB 2.0 Ports: 2 front, 2 back, 1 internal
20	OS Support	Red Hat/ Oracle Enterprise (64 bit)
21	Security	Power-on password, Keyboard password, Quick Lock, Network Server Mode, Serial interface control, Administrator's password
22	Form Factor	Rack (2U), (3.5-inch); Depth 27.25 inches (69.98 cm)
23	Warranty	3 Years Full Warranty with Parts and Labor

3. Backup Database Server

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand	HP/IBM/DELL
2	Model	To be mentioned by the bidder
3	Country of Origin	To be mentioned by the bidder
4	Country of Manufacturing	To be mentioned by the bidder
5	Processor	2 x Six Core Intel® Xeon® Processor E7500 series 2.0 GHz, Upgradability up to 4 processors
6	Chipset	Intel® 7500 Chipset or Higher
7	Memory (RAM)	64 GB (8 x 8GB) DDR3-1333 Registered ECC memory
8	Hard Disk Drive	5x 300GB 6G SAS 10K 2.5" Hot Pluggable DP HDD (expandable up to 8TB)

Sl. No.	Item of Specification	Particulars of Specifications
9	Storage Controller	Min. 512MB Battery Backed Cache Support and RAID Level 0,1 & 5
10	Network Interface Card	Integrated Quad Port Multifunction Gigabit Server Adapter
11	Optical Drive	DVD RW
12	Graphics	64MB video standard
13	Power Supply	4 x 1200W Hot Plug Redundant power supply.
14	System Fan(s)	4 (Four) redundant hot plug fans ship standard (3+1).
15	Expansion Slots	Up to 11 available PCI-Express Gen2 slots
16	Drive Bays	Support for up to 8 Small Form-Factor (SFF) SAS, Serial ATA (SATA) or SSD drives
17	Interfaces	1 x Serial, 1 x Pointing Device (Mouse), 1 x Graphics, 2 x VGA (1 front, 1 rear), 4 Network RJ-45, 1 x iLO 3 remote management Port, 1 x SD slot, Total 6 USB 2.0 Ports: 2 front, 2 back, 2 internal
18	OS Support	Red Hat/ Oracle Enterprise (64 bit)
19	Security	Power-on password, Keyboard password, Quick Lock, Network Server Mode, Serial interface control, Administrator's password
20	Form Factor	4U Rack Mountable
21	Warranty	3 Years Full Warranty with Parts and Labor

4. Central Web Server

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand	HP/IBM/DELL or Any Internationally Reputed Brand
2	Model	To be mentioned by the bidder
3	Country of Origin	To be mentioned by the bidder
4	Country of Manufacturing	To be mentioned by the bidder
5	Processor	2 x Intel® Xeon® Processor E5620(2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2)
6	Processor Upgradeability	Upgradeable to 2 processors (12 cores)
7	Chipset	Intel® 5520 Chipset

Sl. No.	Item of Specification	Particulars of Specifications
8	Cache Memory	Up to 12MB (1x12MB) Level 3 cache
9	Memory (RAM)	64GB (8x8GB) Registered using DDR3 ECC memory, Up to 192GB
10	Hard Disk Drive	5 x HP 300GB 6G SAS 10K 2.5in DP ENT HDD
11	Storage Controller	HP Smart Array P410i/256 MB Controller (RAID 0/1/1+0/5/5+0) equivalent
12	Network Interface Card	Two Dual Port Multifunction Gigabit Server Adapters (four ports total) with TCP/IP Offload Engine, including support for Accelerated iSCSI
13	DVD-RW Drive	SATA DVD RW Optical Drive Standard / equivalent
14	Graphics	Integrated ATI ES1000, 64MB video standard
15	Hot Plug Power Supply	2x 750W Hot Plug Redundant hot plug power supply.
16	System Fan(s)	Fully redundant hot plug fans ship standard (N+1).
17	Expansion Slots	Up to six available PCI-Express Gen2 slots, optional mixed PCI-X / PCI-Express or x16 PCI configurations
18	Media Bays	Standard (16) small form factor (SFF) hot-plug drive bays to support Serial-attached SCSI (SAS) and Serial ATA (SATA) drives.. media bay supporting Optical Drive
19	Interfaces	1 x Serial, 1 x Pointing Device (Mouse), 1 x Graphics, 1 x Keyboard, 2 x VGA (1 front, 1 back), 4 Network RJ-45, 1 x iLO remote management Port, 1 x SD slot, Total 5 USB 2.0 Ports: 2 front, 2 back, 1 internal
20	OS Support	Red Hat/ Oracle Enterprise (64 bit)
21	Security	Power-on password, Keyboard password, QuickLock, Network Server Mode, Serial interface control, Administrator's password
22	Form Factor	Rack (2U), (3.5-inch); Depth 27.25 inches (69.98 cm)
23	Warranty	3 Years Full Warranty with Parts and Labor

5. Backup Application Server

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand	HP/IBM/DELL or Any Internationally Reputed Brand
2	Model	To be mentioned by the bidder
3	Country of Origin	To be mentioned by the bidder

Sl. No.	Item of Specification	Particulars of Specifications
4	Country of Manufacturing	To be mentioned by the bidder
5	Processor	2 x Intel® Xeon® Processor E5620(2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2)
6	Processor Upgradeability	Upgradeable to 2 processors (12 cores)
7	Chipset	Intel® 5520 Chipset
8	Cache Memory	Up to 12MB (1x12MB) Level 3 cache
9	Memory (RAM)	64GB (8x8GB) Registered using DDR3 ECC memory, Upto 192GB
10	Hard Disk Drive	5 x HP 300GB 6G SAS 10K 2.5in DP ENT HDD
11	Storage Controller	HP Smart Array P410i/256 MB Controller (RAID 0/1/1+0/5/5+0) equivalent
12	Network Interface Card	Two Dual Port Multifunction Gigabit Server Adapters (four ports total) with TCP/IP Offload Engine, including support for Accelerated iSCSI
13	DVD-RW Drive	SATA DVD RW Optical Drive Standard / equivalent
14	Graphics	Integrated ATI ES1000, 64MB video standard
15	Hot Plug Power Supply	2x 750W Hot Plug Redundant hot plug power supply.
16	System Fan(s)	Fully redundant hot plug fans ship standard (N+1).
17	Expansion Slots	Up to six available PCI-Express Gen2 slots, optional mixed PCI-X / PCI-Express or x16 PCI configurations
18	Media Bays	Standard (16) small form factor (SFF) hot-plug drive bays to support Serial-attached SCSI (SAS) and Serial ATA (SATA) drives.. media bay supporting Optical Drive
19	Interfaces	1 x Serial, 1 x Pointing Device (Mouse), 1 x Graphics, 1 x Keyboard, 2 x VGA (1 front, 1 back), 4 Network RJ-45, 1 x iLO remote management Port, 1 x SD slot, Total 5 USB 2.0 Ports: 2 front, 2 back, 1 internal
20	OS Support	Red Hat/ Oracle Enterprise (64 bit)
21	Security	Power-on password, Keyboard password, Quick Lock, Network Server Mode, Serial interface control, Administrator's password
22	Form Factor	Rack (2U), (3.5-inch); Depth 27.25 inches (69.98 cm)
23	Warranty	3 Years Full Warranty with Parts and Labor

6. Backup Web Server

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand	HP/IBM/DELL or Any Internationally Reputed Brand
2	Model	To be mentioned by the bidder
3	Country of Origin	To be mentioned by the bidder
4	Country of Manufacturing	To be mentioned by the bidder
5	Processor	2 x Intel® Xeon® Processor E5620(2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo 1/1/2/2)
6	Processor Upgradeability	Upgradeable to 2 processors (12 cores)
7	Chipset	Intel® 5520 Chipset
8	Cache Memory	Up to 12MB (1x12MB) Level 3 cache
9	Memory (RAM)	64GB (8x8GB) Registered using DDR3 ECC memory, Upto 192GB
10	Hard Disk Drive	5 x HP 300GB 6G SAS 10K 2.5in DP ENT HDD
11	Storage Controller	HP Smart Array P410i/256 MB Controller (RAID 0/1/1+0/5/5+0) equivalent
12	Network Interface Card	Two Dual Port Multifunction Gigabit Server Adapters (four ports total) with TCP/IP Offload Engine, including support for Accelerated iSCSI
13	DVD-RW Drive	SATA DVD RW Optical Drive Standard / equivalent
14	Graphics	Integrated ATI ES1000, 64MB video standard.
15	Hot Plug Power Supply	2x 750W Hot Plug Redundant hot plug power supply.
16	System Fan(s)	Fully redundant hot plug fans ship standard (N+1).
17	Expansion Slots	Up to six available PCI-Express Gen2 slots, optional mixed PCI-X / PCI-Express or x16 PCI configurations
18	Media Bays	Standard (16) small form factor (SFF) hot-plug drive bays to support Serial-attached SCSI (SAS) and Serial ATA (SATA) drives. . media bay supporting Optical Drive
19	Interfaces	1 x Serial, 1 x Pointing Device (Mouse), 1 x Graphics, 1 x Keyboard, 2 x VGA (1 front, 1 back), 4 Network RJ-

		45, 1 x iLO remote management Port, 1 x SD slot, Total 5 USB 2.0 Ports: 2 front, 2 back, 1 internal
20	OS Support	Red Hat/ Oracle Enterprise (64 bit)
21	Security	Power-on password, Keyboard password, Quick Lock, Network Server Mode, Serial interface control, Administrator's password
22	Form Factor	Rack (2U), (3.5-inch); Depth 27.25 inches (69.98 cm)
23	Warranty	3 Years Full Warranty with Parts and Labor

7. Storage Device

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand Model	Any Reputed Brand
2	Specification	Storage with LUN Capacity (24 x 1.2 TB) HDD, Redundant Controller, Redundant Power & Auto Fault Management

8. Online UPS

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand & Model	Any Reputed Brand
2	Capacity	6KVA
3	Country of Origin	Taiwan/China/USA/Any European Country
4	Country of assemble	China or any Country
5	Type	True Online Double Conversion
6	Phase	1 phase and Ground
7	Input Rated Voltage	220/230VAC
8	Input Voltage Range	120VAC-276VAC
9	Input Frequency Range	46 Hz ~ 54 Hz
10	Input Power Factor	>0.99
11	Input Bypass voltage range	Max. Voltage: ±20% Min. voltage:-50%
12	Input ECO range	Same as the bypass
13	Input Harmonic current	<6%(100% nonlinear load)

14	Output Phase	Single Phase and ground
15	Output Rated Voltage	220/230/240VAC
16	Output Power Factor	>0.9
17	Output Voltage precision	±1%
18	Output frequency	Utility mode: ±1%, ± 2%, ±4%, ±5%, ±10% of the rated frequency
		Battery Mode: (50±0.2%) Hz
19	Output Crest Factor	3:1
20	Output Transfer Time	Utility to Battery:0ms, Utility to bypass: 0ms
21	Output Over load Capacity	Load<110%, <125%, last 10min. <150%, last 1min.
22	Output THD	<3%
23	Output Efficiency	ECO Mode>90%; normal mode 89%
24	Battery Voltage	240V DC
25	Backup time	60 min (Comply the bulb test with 3500W)
26	Charge current	1A (standard), Max. 6A
27	Communication Interface	RS232, Optical coupler Dry contact, RS485, SNMP card
28	Operating Temperature	0°C-40°C
29	Operating Humidity	0-95% non condensing
30	Storage Temperature	-25°C~55°C
31	Altitude	<1500m
32	Application standard	CE/EN/IEC-62040-2, EN/EC62040-1-1
33	Warranty	3 years full with battery & service

9. Router

Sl. No.	Item of Specification	Particulars of Specifications
1	PWR-2911-AC	Cisco 2911 AC Power Supply
2	CAB-ACU	AC Power Cord (UK) C13 BS 1363 2.5m
3	HWIC-BLANK	3 Blank faceplates for HWIC slot on Cisco ISR
4	ISR-CCP-EXP	Cisco Config Pro Express on Router Flash
5	MEM-2900-512MB-DEF	512MB DRAM for Cisco 2901-2921 ISR (Default)
6	MEM-CF-256MB	256MB Compact Flash for Cisco 1900 2900 3900 ISR
7	SL-29-IPB-K9	IP Base License for Cisco 2901-2951
8	SL-29-SEC-K9	Security License for Cisco 2901-2951

9	SM-S-BLANK	Removable faceplate for SM slot on Cisco 290039004400 ISR
10	S29UK9-15403M	Cisco 2901-2921 IOS UNIVERSAL

10. Manageable Switches

Sl. No.	Item of Specification	Particulars of Specifications
1	Brand Model	Cisco Catalyst 2960 24 10/100 + 2 T/SFP LAN Lite Image
2	Specification	SMBS 8X5XNBD Cat 2960 24 10/100 + 2 T/SFP LAN Lite Im
3	Power	AC Power Cord (UK) C13 BS 1363 2.5m

11. 3/2 TON AIR-CONDITIONAR MACHINE

Sr. No.	Specification	Description	Unit	LPD36F1AT1
1	Capacity	Cooling	BTU/Hr.	36000
		Compressor	Type	Reciprocating
2	Electricity Rating	Power Supply	Volt/Ph/Hz	380-415/Three/50
		Power Input	Watts	3300
		Running Current	Amps	6/PHASE
3	Performance	EER	BTU/Hr./W	10.91
		Air Circulation(Indoor/Outdoor)	CFM	530/1590
		Moisture Removal	Lt/hr	5
		Noise Level (Indoor/Outdoor)	db	46/59
4	Operation	Panel Display	Type	LCD
		Remote Controller	Type	LCD
5	Features	Tem. Control		Thermostat
		Air Direction		4 Way Deflection
		Energy Saver		✓
		Auto Air Swing	Two Way	✓

		Speed Setting	Cooling/Fan	✓
		Air Discharge		Top
		Auto Restart		✓
		Dehumidification		✓
		On/Off Timer		✓
		Jet cool		✓
		Filter Cleaning Indicator		✓
6	Filters	Anti-Bacteria Filter		✓
7	Dimensions	Width x Height x Depth	Indoor (mm) 320	500 x 1800 x 320
			Outdoor (mm)	870 x 655 x 322
8	Net weight	Indoor	Kg	40
		Outdoor		72

12. TERMINAL/PC

Intel 7th Gen Core i7-7700

Processor-3.6 GHz up to 4.2 GHz Turbo Boost

8 MB cache

4 cores/Intel® H270 Chipset

8GB DDR4 RAM-2400MHz

1TB SATA-7200rpm HDD

DVD+/-RW Drive

HD 630 Graphics

18.5" Monitor

USB Optical Mouse

USB Keyboard

Internal Speaker

3 year Warranty

13. Key-feature List of Critical Equipments for Vehicle Inspection

Name: Sideslip Tester

Features	Light Lane	Heavy Lane
Max. Axle Load	1500 kg	10000 kg
Measurement Range	±15.0 m/km	±15.0 m/km
Calibration Ratio	1 mm : 2.0 m/km	1 mm : 1.0 m/km
Mechanical Type	Single plate with release board	Double Plates with release board
Sideslip Plate Dimension(LxW)	600x500 mm	1100x1000 mm
Releasing Plate(LxW)	600*250 mm	1100x300 mm
Min. Inner Distance of Wheeler	None	700 mm
Max. Outer Distance of Wheeler	None	2850 mm
Body Dimension(LxWxH)	0-40°C	3730x1475x220 mm

Body Weight	85 kg	900 kg
Working Temperature	0~40°C	0~40°C
Working Humidity	<90%	<90%

Name: Suspension Tester

Max. Wheeler Load to Pass	5000 kg
Max. Measurement Wheeler Load	1500 kg
Vibration Plate(LxW)	650x400 mm
Vibrating Range	6 mm
Vibrating Frequency	>15 Hz
Wheeler Diameter	500~800 mm
Min. Inner Distance of Wheeler	850 mm
Max. Outer Distance of Wheeler	2000 mm
Motor Power	2.2 kW * 2
Body Dimension(LxWxH)	2390x450x325 mm
Body Weight	500 kg
Working Electricity	AC 3 phase 380V/50Hz, ground lead
Environment Temperature	0~40°C
Environment Humidity	<90%

Name: Roller Brake Tester

Features	Light Lane	Heavy Lane
Max. Axle load	3000 kg	10000 kg
Measurement Range of Axle Weight	0~1500 kg	0~10000 kg
Brake Force Measurement Range	0~12500 N x2	0~30000 N x2
Roller Diameter	0245 mm	0245 mm
Roller Length	900 mm	1100 mm
Height Gap Front v.s. Rear Roller	None	30 mm
Adhesion Coefficient (dry/wet)	> 0.80/0.6	> 0.80/0.60
Roller Distance	432 mm	457 mm
Roller Testing Speed	2.5 km/h	2.5 km/h
Diameter Range of the wheeler	500~900 mm	600 ~ 1100 mm
Min. Inner Distance of Wheeler	800 mm	750 mm
Max. Outer Distance of Wheeler	2500 mm	2850 mm
Motor Power	4.0 kW x 2	11.0 kW x
Body Dimension(LxWxH)	2970x830x420 mm	4650x1160x600 mm
Body Weight	1075 kg	1800 kg
Motor Working Electricity	AC 3 phase 380V/50Hz, ground lead	AC 3 phase 380V/50Hz, ground lead
Magnetic Valve Working Electricity	AC single phase 220V/50Hz, ground lead	AC single phase 220V/50Hz, ground lead
Pressure of the Compressed Air	0.7~0.8 MPa	0.7~0.8 MPa
Working Temperature	0~40°C	0~40°C
Working Humidity	<90%	<90%

Name: Opacimeter

Measurement Range (N)	0~99.90%
Coefficient of light-absorption C k)	0~16.08m ⁻¹
Smoke Temperature Range	0~ 150 °C
Opacity Resolution	0.01%

Result Indication Accuracy	±2.0%
Smoke Temperature Indication Accuracy	±5°C
Working Temperature	0°C~40 °C
Working Humidity	0~85%
Working Electricity	AC 220±10%, 50Hz±1Hz
Power Consumption	200W
Controlling Unit Dimension/Weight	430x130x363mm / 7kg
Measuring Unit Dimension/Weight	360x240x 185mm / 5kg

Name: Full Automatic Headlight Tester

Max. Accuracy of the Result Indication	<±12%
Luminous Intensity Range	0~120000cd
High Beam Measurement Vertical Range	up 40cm/dam ~ down 56cm/dam (up 2°30' ~ down 3°)
High Beam Measurement Horizontal Range	left 56cm/dam ~ right 56cm/dam (left 3°~ right 3°)
Low Beam Measurement Vertical Range	up 40cm/dam ~ down 56cm/dam (up 2°30' ~ down 3°)
Low Beam Measurement Horizontal Range	left 56cm/dam ~ right 56cm/dam (left 3°~ right 3°)
Light Height Measurement Range	350~1400mm
Testing Distance	1m
Environment Temperature	-5~ 40 °C
Power Consumption	working: 200W; standby: 37W
Environment Humidity	<90%
Body Dimension	800x670x1700 mm
Body Weight	100kg
Guide Rail Length/Weight	5m / 35kg
Working Electricity	50Hz, AC 220V±10%

Name: Gas Analyzer

Measurement Range	
CO	0.00 %vol to 10.00 %vol
HC	0 ppm vol to 14000 ppm vol
CO ₂	0.00 %vol to 20.00 %vol
LAMBDA	0.000 to 9.999
O ₂	0.00 %vol to 25.00 %vol
Indication Accuracy	
CO	0.01 %vol
HC	1 ppm vol
CO ₂	0.01 %vol
LAMBDA	0.01
O ₂	0.01 %vol
Working Environment	
Environment Temperature	0°C~50°C
Environment Humidity	<= 85%
Environment Air-Pressure	86~108kpa (altitude-300m~2000m)
Working Electricity	220V ±10% AC, 50Hz±2%
Main Body Dimension	240x180x460 (mm)
Weight	8.5kg~
Warm-up time	15 seconds
Responding time	10 seconds(NDIR), O ₂ :10 seconds,

Name: Speedometer Tester

	Light Lane	Heavy Lane
Max. Axle load	3000 kg	10000 kg
Max. Testing Speed	120 km/h	120 km/h
Roller Rolling Speed Ratio	1 km/h » 27.927 r/min	1 km/h = 27.927 r/min
Roller Driven Mode	Follower Mode	Follower Mode
Roller Diameter	O190 mm	0190 mm
Roller Length	900 mm	1100 mm

Roller Distance	380 mm	405 mm
Wheeler Diameter Range	500~800 mm	500~1100 mm
Min. Inner Distance of Wheeler	850 mm	750 mm
Max. Outer Distance of Wheeler	2400 mm	2850 mm
Body Dimension(LxWxH)	3000x725x380 mm	3400x800x340 mm
Body Weight	600 kg	900 kg
Magnetic Valve Working Electricity	AC single phase 220V/50Hz, ground lead	AC single phase 220V/50Hz, ground lead
Pressure of the Compressed Air	0.5~0.6 MPa	0.7~0.8 MPa
Working Temperature	0~40°C	0~40°C
Working Humidity	<90%	<90%

Note: Service Provider must have submit all hardware specification if additional necessary for this procurement to complete the service. All items which have mentioned in RFP documents shall be higher or equivalent as per given specifications. The service provider shall must submit the detail specification, Brand name, model, make, country of origin etc. of that items for evaluation. Below standard item shall not be acceptable.