

**Tender Document No.:**

**PROCUREMENT OF A TURNKEY SOLUTION COMPRISING E-TICKETING, AI INTEGRABLE IP CAMERAS, FLEET MANAGEMENT SYSTEM, SAFARI ANIMAL WEBCAM, IT INFRASTRUCTURE AND DATA CENTER FOR SAFARI ZOO LAHORE**



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DEPARTMENT**

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IMPLEMENTATION OF MASTER PLAN OF  
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## Section-I: Invitation to Bids

**BIDDING DOCUMENTS FOR THE TURNKEY SOLUTION COMPRISING E-TICKETING SYSTEM, AI INTEGRABLE IP BASED CAMERAS, FLEET MANAGEMENT SYSTEM, SAFARI ANIMAL WEBCAM, IT INFRASTRUCTURE AND DATACENTER FOR LAHORE SAFARI**

1. Sealed Bids are invited from Bidders i.e., firms/companies/sole proprietor engaged in trading, registered with relevant Registration Authorities and Tax Departments/ Authorities (Income Tax, Sales Tax & Punjab Sales Tax etc.). The Bids shall be received as per single stage two envelope procedures.

Lot No.	Description	Quantity	Estimated Cost	Bid Security (5%)
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1	Turnkey Solution for Lahore Safari Zoo which includes: <ul style="list-style-type: none"> <li>• E-Ticketing and Queue Management (Equipment)</li> <li>• AI Integratable IP Cameras</li> <li>• CCTV Cameras</li> <li>• Webcam/Streaming cameras</li> <li>• Car/Vehicle/Fleet GPS Tracker</li> <li>• SMD and LED Screen</li> <li>• Unified communication system for internal &amp; external communication.</li> <li>• Datacenter, Networking, and IT Equipment</li> <li>• Data Center Accessories</li> <li>• Datacenter Virtualization</li> <li>• E-Ticketing and Queue Management Technology Solution and Software Applications</li> <li>• Professional Services</li> </ul>	01		
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1. All Bids must be accompanied by a Bid Security of 5% of total price, and in the form of CDR/Bank Guarantee / Demand Draft / Pay Order. Late Bids shall be rejected.
2. The complete Bid must be delivered into the Tender Box, placed at Lahore Safari Zoo as per the following schedule:

<b>Bid Submission Date &amp; Time</b>	<b>22 December, 2023 @1300 PST</b>
<b>Bid Opening Date &amp; Time</b>	<b>22 December , 2023 @ 1400 PST</b>
<b>Pre-Bid Meeting Date, Time &amp; Place</b>	<b>20 December, 2023 @ 1200 PST Safari Zoo Lahore, Raiwind Road Lahore</b>

3. Bidding Documents are immediately available after date of publication. Punjab Wildlife & Parks Department will not be responsible for any cost or expense incurred by Bidders in connection with the preparation or delivery of Bids. In case of official holiday on the day of submission, next day will be treated as closing date. The Bidding document carrying all details can also be downloaded from Punjab Procurement Regulatory Authority's website <http://ppra.punjab.gov.pk>.

## **Section-II: Instructions to Bidders (ITB)**

**Note: - All the procurement procedures shall be conducted in accordance with Punjab Procurement Authority Act-2009 and Punjab Procurement Rules-2014. In case of any conflict between the provision of this document and PPRA Act-2009/ PPRA Rules-2014, the later shall prevail.**

### **1. INTRODUCTION**

#### **2.1.1 Scope of Bid**

i) The Procuring Agency (PA), as indicated in the Bid Data Sheet (BDS) invites Bids for the provision of Goods as specified in the Section-IV Bid Data Sheet (BDS) and Section III - Technical Specifications & Section VII- Schedule of Requirements. The successful Bidders will be expected to deliver, install/ commissioning) the goods within the specified period and timeline(s) as stated in the BDS.

#### **2.1.2 Source of Funds**

i) The Procuring Agency named in the Bid Data Sheet has received budget from the Government of Punjab. The Procuring Agency intends to apply the provided funds/ a portion of this budget to make eligible payments under the contract for which the Invitation to bids has been issued.



### 2.1.3 Eligible Bidders

- (i) The Invitation to Bids is open to all suppliers i.e., association of firms/companies/sole proprietor, (JV, if applicable), registered with relevant Registration Authorities and Tax Departments/ Authorities (Income Tax, Sales Tax & Punjab Sales Tax etc.), except as provided hereinafter.
- ii) Bidders should not be associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Procuring Agency to provide consultancy services for the preparation of the design, specifications, and other documents to be used for the procurement of the goods to be purchased under this Invitation to Bids [if applicable].
- iii) Government-owned enterprises may participate only if they are duly/legally authorized in this regard by the respective/relevant competent forum/authority.
- iv) Bidders shall not be under a declaration of blacklisting by any Government department/other Procuring Agency or by Punjab Procurement Regulatory Authority (PPRA). During the Procurement Process / execution of the Contract, if the firm/bidder is blacklisted by any Government department/other Procuring Agency or by Punjab Procurement Regulatory Authority (PPRA), if such blacklisted bidder wants to execute the contract awarded after its blacklisting, the bidder/ firm shall provide 100% Bank Guarantee against the awarded Contract value and in case the bidder regret to do so then the Procuring Agency may proceed with second lowest evaluated bidder.
- v) In the case of a Joint Venture, Consortium, or Association, all members shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The Joint Venture, Consortium, or Association shall nominate a Lead Member as nominated in the BDS, who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture, consortium, or association during the Bidding process, and in case of award of contract, during the execution of contract.

***[It is upon procuring agency to decide the participation of Bidders in J.V mode. The limit on the number of members of JV or Consortium or Association and extent of their role shall be prescribed in BDS, in accordance with the guidelines issued by the PPRA].***

- vi) The appointment of Lead Member in the Joint Venture, Consortium, or Association shall be confirmed by submission of a valid JV or Consortium agreement to the Procuring Agency.
- vii) Any agreement that forms a Joint Venture, Consortium or Association shall be required to be submitted as part of the Bid and shall be attested.
- viii) Any bid submitted by the Joint Venture, Consortium or Association shall indicate the part of proposed contract to be performed by each party and each party shall be evaluated or post qualified with respect to its contribution only and the responsibilities of each party and shall not be substantially altered without prior written approval of the Procuring Agency and in line with any instructions issued by the Authority.
- ix) The invitation for Bids is open to all prospective Supplier, Manufacturers or Authorized Agents/Dealers/Distributors subject to any provisions or licensing/regulatory requirements issued by the respective National/ Provincial Professional Statutory Body established for that particular trade or business as mentioned in bid data sheet.
- x) A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be non-Responsive. A Bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if they:
  - a) Are associated or have been associated for the procurement of the goods to be purchased under this Invitation for Bids, directly or indirectly with a firm or any of its affiliates which have been engaged by the Procuring Agency to provide consulting services for the preparation of the design, specifications and other documents to be used.
  - b) Have controlling shareholders in common; or
  - c) Receive or have received any direct or indirect subsidy from any of them; or
  - d) Have the same legal representative for purposes of this Bid; or
  - e) Have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Procuring Agency regarding this Bidding process; or
- xii) A Bidder may be ineligible if –

- (a) The Bidder is declared bankrupt or, in the case of company or firm, insolvent;
  - (b) Payments in favor of the Bidder is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting, in accordance with the national laws, in the total or partial loss of the right to administer and dispose of its property;
  - (c) Legal proceedings are established against such Bidder involving an order suspending payments and which may result, in accordance with the national laws, in a declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of the property;
  - (d) The Bidder is convicted, by a final judgment, of any offence involving professional conduct;
  - (e) The Bidder is debarred and blacklisted due to involvement in corrupt and fraudulent practices in accordance with the provision of section 17A of PPRA Act, 2009 and Rule-21, read with Schedule appended with, Punjab Procurement Rules, 2014.
  - (f) The Bidder is debarred and blacklisted in general (i.e., to the extent of all public procurement) due to consistent performance failure in accordance with the section 17A of PPRA Act, 2009 and Rule-21, read with Schedule appended with, Punjab Procurement Rules, 2014.
  - (g) The firm, supplier and contractor is blacklisted/ debarred by any international organization.
- xiii) Bidders shall provide to the Procuring Agency evidence of their eligibility, proof of compliance with the necessary legal requirements to carry out the contract effectively.
  - xiv) Bidders shall provide such evidence of their continued eligibility satisfactory to the Procuring Agency, as the Procuring Agency shall reasonably request.
  - xv) Bidders shall submit proposals relating to the nature, conditions and modalities of sub-contracting wherever the sub-contracting of any elements of the contract amounting to more than ten percent of the Bid price is envisaged.

**2.1.4 Eligible Goods and Services**

- i) All goods and related services to be supplied under the Contract shall have their origin in eligible source countries, defined in the ***Bid Data Sheet (BDS/Technical Specification)***, and all expenditures made under the contract will be limited to such goods and related services.
- ii) For purposes of this clause, “origin” means the place where the goods are mined, grown, or produced, or the place from which the related services are supplied. Goods are produced when, through manufacturing, processing, or substantial and major assembly of components, a commercially-recognized product is obtained that is substantially different in basic characteristics or in purpose or utility from its components.
- iii) The origin of goods and services is distinct from the nationality of the Bidder. *In any case, the requirements of Rules 10 & 26 of PPR-14, shall be followed.*

**2.1.5 Cost of Bidding**

- i) The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Procuring Agency named in the Bid Data Sheet, hereinafter referred to as “the Procuring

### **2.1.6 One person one bid**

- Agency,” will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.
- i) As per Rule 36A of Punjab Procurement Rules 2014, a Bidder shall submit only one Bid in the same bidding process, either individually as a Bidder or as a member in a joint venture or any similar arrangement.
  - ii) No Bidder can be a sub-contractor while submitting a Bid individually or as a member of a joint venture in the same Bidding process.
  - iii) A Bidder, if acting in the capacity of sub-contractor in any Bid, shall not submit bid for the same.

## **2.1 The Bidding Documents**

### **2.1.1 Content of Bidding Documents**

- i) The goods required, Bidding procedures, and contract terms are prescribed in the Bidding documents. The Bidding documents, inter alia, include:
  - (a) Invitation to Bids
  - (b) Instructions to Bidders(ITB)
  - (c) Technical Specifications
  - (d) Bid Data Sheet
  - (e) General Conditions of Contract (GCC)
  - (f) Special Conditions of Contract (SCC)
  - (g) Schedule of Requirements
  - (h) Bid Form
  - (i) Manufacturer’s Authorization Form
  - (j) Bidder Profile Form
  - (k) General Information Form
  - (l) Affidavit
  - (m) Bid Security Form
  - (n) Technical Bid Form

- (o) Contract Form
- (p) Financial Bid Form / Price Schedule
- (q) Performance Guarantee Form
- (r) Check List

ii) The Bidder is required to examine all instructions, forms, terms, and specifications in the Bidding documents. Failure to furnish all information as required by the Bidding documents or to submit a Bid not responsive to the Bidding documents in every respect will be at the Bidder's risk and may result in the rejection of its Bid.

iii) In case of discrepancies between the Invitation to Bid and the Bidding Documents listed in **ITB 2.2.1 (i)** above, the said Bidding Documents, not in conflict with any provision of PPR-14, will take precedence.

iv) The Procuring Agency is not responsible for the completeness of the Bidding Documents and their addenda, if they were not obtained directly from the Procuring Agency or from its website or website of PPRA. Re-confirming from the Procuring Agency that all pages/ contents have been properly and clearly received is the prime responsibility of the Bidder.

**2.2.2 Clarification of Bidding Documents**

i) A prospective Bidder requiring any clarification of the Bidding documents may notify the Procuring Agency in writing or by email at the Procuring Agency's address indicated in Invitation to Bid/ Tender Notice/ Advertisement. The Procuring Agency will respond in writing to any request for clarification of the Bidding documents which it receives **no later than seven (7) days prior to the deadline for the submission of Bids** prescribed in the Bid Data Sheet. Written copies of the Procuring Agency's response (including an explanation of the query but without identifying) will be sent to all prospective Bidders that have received the Bidding documents.

ii) A prospective Bidder requiring any clarification of the Bidding Documents may notify the Procuring Agency in writing or in electronic form that provides record of the content of communication at the Procuring Agency's address indicated in the **BDS**.

iii) The Procuring Agency will within three (3) working days after receiving the request for clarification, respond in writing or in electronic form to any request for clarification provided that

such request is received not later than seven (7) days prior to the deadline for the submission of Bids. As prescribed in **ITB 2.2.2 (i), above**. However, this clause shall not apply in case of alternate methods of Procurement.

- iv) Copies of the Procuring Agency's response will be uploaded on the website of procuring agency on given date and forwarded to identified Prospective Bidders through an expeditious identified source of communication, e.g.: e-mail etc., including a description of the inquiry, but without identifying its source.
- v) Should the Procuring Agency deem it necessary to amend the Bidding Documents as a result of a clarification, it shall do so following the procedure under **ITB 2.2.3**.
- vi) If indicated **in the BDS**, the Bidder's designated representative is invited at the Bidder's cost to attend a pre-Bid meeting at the place, date and time mentioned **in the BDS**. During this pre-Bid meeting, prospective Bidders may request clarification of the schedule of requirement, the Evaluation Criteria or any other aspects of the Bidding Documents.
- vii) Minutes of the pre-Bid meeting, if applicable, including the text of the questions asked by Bidders, including those during the meeting (without identifying the source) and the responses given, together with any responses prepared after the meeting will be transmitted promptly to all prospective Bidders who have obtained the Bidding Documents and by uploading same on the website of the procuring agency. Any modification to the Bidding Documents that may become necessary as a result of the pre-Bid meeting shall be made by the Procuring Agency exclusively through the use of an Addendum pursuant to ITB 2.2.3. Non-attendance at the pre-Bid meeting will not be a cause for disqualification of a Bidder.
- i) At any time prior to the deadline for submission of Bids, but not later than three (3) days before the closing date of the submission of Bid, the Procuring Agency, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, may modify the Bidding documents by amendment. Any such change/amendment in the Bidding documents shall be provided in a timely manner, preferably through electronic means also, not later than three (3) days, and on equal opportunity basis as per Rule-25(3) OR Rule 25(4) of PPR-14 as the case may be.
- ii) In order to allow prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the

### **2.2.3 Amendment of Bidding Documents**

Procuring Agency, at its discretion, may extend the deadline for the submission of Bids, as per rule 29 of PPR-14, in the manner similar to the original advertisements, so as to avoid any inconvenience and to doubly ensure level playing field for all prospective bidders.

## 2.3 Preparation of Bids

### 2.3.1 Language of Bid

- i) The Bid prepared by the Bidder, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the Procuring Agency shall be written in the language specified in the Bid Data Sheet. Supporting documents and printed literature furnished by the Bidder may be in same language.

### 2.3.2 Bid Form

- i) The Bidder shall complete the Bid Form and the appropriate Price Schedule (Financial Bid) furnished in the Bidding documents, indicating the goods to be supplied, a brief description of the goods, their country of origin, quantity, and prices.

### 2.3.3 Bid Prices

- i) The Bidder shall indicate on form 8.10 the unit prices (where applicable) and total Bid price of the solution it proposes to supply under the contract.
- ii) Prices indicated on the Price Schedule shall be **for complete turnkey solution**.
- iii) The Bidder's separation of price components in accordance with ITB Clause 2.3.3(ii) above will be solely for the purpose of facilitating the comparison of Bids by the Procuring Agency and will not in any way limit the Procuring Agency's right to contract on any of the terms offered.
- iv) Prices quoted by the Bidder shall be fixed during the Bidder's performance of the contract and not subject to variation on any account, unless otherwise specified in the Bid Data Sheet. A Bid submitted with an **adjustable price quotation** will be treated as non-responsive and may be rejected.



**2.3.4 Bid Currencies** i) Prices shall be quoted in **Pak Rupees** unless otherwise specified in the Bid Data Sheet.

**2.3.5. Documents Establishing Bidder's Eligibility and Qualification** i) Pursuant to ITB Clause 2.1.3, the Bidder shall furnish, as part of its Bid, documents establishing the Bidder's eligibility to Bid and its qualifications to perform the contract if its Bid is accepted.

ii) The documentary evidence of the Bidder's eligibility to Bid shall establish to the Procuring Agency's satisfaction that the Bidder, at the time of submission of its Bid, is eligible as defined under ITB Clause 2.1.3.

The documentary evidence, of the Bidder's qualifications to perform the contract if its Bid is accepted, shall establish to the Procuring Agency's satisfaction:

(a) that, in the case of a Bidder offering to supply goods under the contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorized by the goods' Manufacturer **[Manufacturer's Authorization form No. 8.3]** or producer to supply the same in Pakistan;

(b) that the Bidder has the financial, technical, and production capability necessary to perform the contract;

(c) that, in the case of a Bidder not doing business within Pakistan, the Bidder is or will be (if awarded the contract) represented by an Agent in that country equipped, and able to carry out the Supplier's maintenance, repair, and spare parts-stocking obligations prescribed in the Conditions of Contract and/or Technical Specifications; and

(d) that the Bidder meets the qualification criteria listed in the Bid Data Sheet.

**2.3.6. Documents Establishing Goods' Eligibility and Conformity to Bidding Documents** i) Pursuant to ITB Clause 2.1.4, the Bidder shall furnish, as part of its Bid, documents establishing the eligibility and conformity to the Bidding documents of all goods and related services which the Bidder proposes to supply under the contract.

ii) The documentary evidence of the eligibility of the goods and services shall consist of a statement in the Price Schedule/Financial Bid Form of the country of origin of the goods and services offered which shall be confirmed by a Certificate of Origin issued at the time of shipment.

- iii) The documentary evidence of conformity of the goods and services to the Bidding documents may be in the form of literature, drawings, data and shall consist of:
  - (a) A detailed description of the essential technical and performance characteristics of the goods;
  - (b) A list giving full particulars, including available sources and current prices of spare parts, special tools, etc., necessary for the proper and continuing functioning of the goods for a period to be specified in the Bid Data Sheet, following commencement of the use of the goods by the Procuring Agency; and
  - (c) An item-by-item commentary on the Procuring Agency's Technical Specifications demonstrating **responsiveness** of the goods and services to those specifications, or a statement of deviations and exceptions to the provisions of the Technical Specifications.
  
- iv) For purposes of the commentary to be furnished, the Bidder shall note that standards for workmanship, material, and equipment, as well as references to brand names or catalogue numbers designated by the Procuring Agency in its Technical Specifications, are intended to be descriptive only and not restrictive.
  
- v) Where a sample(s) is required by a procuring agency, the sample shall be:
  - a) submitted as part of the bid, in the quantities, dimensions and other details requested in the BDS;
  - b) carriage paid;
  - c) received on, or before, the closing time and date for the submission of bids; and
  - d) Evaluated to determine compliance with all characteristics listed in the BDS.

***{However, the procuring agency may also opt to ask for samples after submission of technical bids (where required)}***
  
- vi) The Procuring Agency may retain the sample(s) of the successful Bidder till the successful delivery of the goods. A Procuring Agency may reject the Bid if the sample(s)-
  - (a) do(es) not conform to all characteristics prescribed in the bidding documents; and
  - (b) is/are not submitted within the specified time clearly mentioned in the Bid Data Sheet.

- vii) Where it is not possible to avoid using a propriety article as a sample, a Bidder shall make it clear that the propriety article is displayed only as an example of the type or quality of the goods being Bided for, and that competition shall not thereby be limited to the extent of that article only.
- viii) Samples made up from materials supplied by a Procuring Agency shall not be returned to a Bidder nor shall a Procuring Agency be liable for the cost of making them.
- ix) All samples produced from materials belonging to an unsuccessful Bidder may be kept by the Procuring Agency till thirty (30) days from the date of award of contract or exhaust of all the grievance forums (including those pending at Authority's Level or in some Court of Law).
- x) **Pursuant to the requirements as indicated in ITB 2.3.6, the Bidder shall furnish, as part of its Bid, all those documents establishing the eligibility in conformity to the terms and conditions specified in the Bidding Documents for all goods and related services which the Bidder proposes to deliver.**
- xi) The Bidder shall also furnish a list giving full particulars, including available sources and current prices of goods, spare parts, special tools, etc., necessary for the proper and continuing functioning of the Goods during the period **specified in the BDS** following commencement of the use of the goods by the Procuring Agency.
- xii) The required documents and other accompanying documents must be in English. In case any other language than English is used the pertinent translation attested by the embassy in country of manufacturer into English shall be attached to the original version.

### **2.3.7. Bid Security**

- i) The Bidder shall furnish, as part of its Bid, a Bid security in the amount specified in the Bid Data Sheet.
- ii) The Bid security is required to protect the Procuring Agency against the risk of Bidder's conduct which would warrant the security's forfeiture Pursuant to ITB Clause 2.3.8. (vii).

iii) The Bid security shall be in Pakistan Rupees and shall be in one of the following forms:

(a) Bank Guarantee, Bank call-deposit (CDR), Demand Draft

(DD), Pay Order (PO) or Banker's cheque valid for

**Thirty (30) Days, beyond the validity of Bid, or until furnishing of the Performance Security, whichever is later.**

iv) Any Bid not secured in accordance with ITB Clauses 2.3.8 (i) and (ii) may be rejected by the Procuring Agency as non-responsive.

v) Unsuccessful Bidders' Bid security will be discharged or returned as promptly as possible but not later than **Thirty(30) days** after the expiration of the period of Bid validity prescribed by the Procuring Agency pursuant to ITB Clause 2.3.8 (ii) or along with unopened financial proposal as per rule 38(2)(a)(vii) of PPR-14, which shall take precedence, and is as under:

*“38(2)(a)(vii) the financial proposal of the Bids found technically non-responsive shall be retained unopened and shall be returned on the expiry of the grievance period or the decision of the complaint, if any, filed by the non-responsive Bidder, whichever is later:*

*provided that the Procuring Agency may return the sealed financial proposal earlier if the disqualified or non-responsive Bidder, contractor or consultant submits an affidavit, through an authorized representative, to the effect that he is satisfied with the proceedings of the Procuring Agency”.*

vi) The successful Bidder's Bid security will be discharged upon the Bidder signing the contract, pursuant to ITB Clause 2.6.1, and furnishing the Performance Guarantee, pursuant to ITB Clause 2.6.2.

The Bid security may be forfeited:

- a. If a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Bid Form; or
- b. In the case of a successful Bidder, if the Bidder:
  - i. Fails to sign the contract in accordance with ITB Clause 2.6.3 **or**

- ii. Fails to furnish Performance Guarantee in accordance with ITB Clause 2.6.2; or
- iii. If the blacklisting proceedings under Section-17A of PPRA Act, 2009 read with Rule-21 of PPR-14 are initiated and the bidder is declared blacklisted after due process of law.

**2.3.8 Period of Validity of Bids**

- i) Bids shall remain valid for the period specified in the Bid Data Sheet after the date of Bid opening prescribed by the Procuring Agency. A Bid valid for a shorter period may be rejected by the Procuring Agency as non-responsive.
- ii) In exceptional circumstances, the Procuring Agency may solicit the Bidder's consent to an extension of the period of validity (as per rule-28 of PPR-14). The request and the responses thereto shall be made in writing (or by email). The Bid security provided under ITB Clause 2.3.8 shall also be suitably extended. A Bidder may refuse the request without forfeiting its Bid security. A Bidder accepting the request will not be required nor permitted to modify its Bid.

**2.3.9 Format and Signing of Bid**

- i) The Bidder shall prepare an original and the number of copies of the Bid indicated in the Bid Data Sheet, clearly marking each "ORIGINAL BID" and "COPY OF BID," as appropriate. In the event of any discrepancy between them, the original shall prevail.
- ii) The Bidder shall authorize a person/ persons for signing, submission and further correspondence with Procuring Agency on behalf of bidder. Authority letter must be part of bid. However, in case of any issue bidder shall be responsible for all consequences.
- iii) The original and the copy or copies of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person duly authorized to bind the Bidder to the contract. All pages of the Bid, shall be signed and stamped by the authorized person.
- iv) Any interlineation, erasures, or overwriting shall be valid only if they are initialed by the authorized person for signing the Bid.

- v) The original and the copy or copies of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the **BDS** and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid, shall be signed and stamped by the authorized person.
- vi) Any interlineations, erasures, or overwriting shall be valid only if they are signed by the person or persons signing the Bidder.
- vii) The Bidder shall furnish information as described in the Form of Bid on commissions or gratuities, if any, paid or to be paid to agents relating to this Bid and to contract execution if the Bidder is awarded the contract.

## **2.4 Submission of Bids**

### **2.4.1 Sealing and Marking of Bids**

- i) As per Rule 24, the Bidder shall seal the original and each copy of the Bid in separate envelopes, duly marking the envelopes as "ORIGINAL" and "COPY." The envelopes shall then be sealed in an outer envelope.
- ii) The inner and outer envelopes shall:
  - a. be addressed to the Procuring Agency at the address given in the Bid Data Sheet; and
  - b. bear the title of procurement Activity indicated in the Bid Data Sheet, the Invitation to Bids (ITB) title and number indicated in the Bid Data Sheet, and a statement: "DO NOT OPEN BEFORE 22-12-2023 (1400 PST)," *[to be completed with the time and the date specified in the Bid Data Sheet, pursuant to ITB Clause 2.4.2.]*
- iii) The inner envelopes shall also indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared "late".

- iv) If the outer envelope is not sealed and marked as required by ITB Clause 2.4.1 (i), the Procuring Agency will assume no responsibility for the Bid's misplacement or premature opening.
- v) In case of Single Stage One Envelope Procedure, the Bidder shall seal the original and each copy of the Bid in separate envelopes, duly marking the envelopes as "ORIGINAL" and "COPY." The envelopes shall then be sealed in an outer envelope securely sealed in such a manner that opening and resealing cannot be achieved undetected.  
**Note:** The envelopes shall be sealed and marked in accordance with the bidding procedure adopted as referred in Rule-38 of PPR-2014, which shall have precedence.
- vi) The inner and outer envelopes shall:
  - a) Be addressed to the Procuring Agency at the address given in the **BDS**; and
  - b) Bear the title of the subject procurement or Project name, as the case may be as indicated in the **BDS**, the Invitation to Bids (ITB) title and number indicated in the **BDS**, and a statement: "DO NOT OPEN BEFORE," to be completed with the time and the date specified in the **BDS**, pursuant to **ITB 2.4.2**.
- vii) In case of Single Stage Two Envelope Procedure, The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Proposal and the other Financial Proposal. Both envelopes to be enclosed together in an outer single envelope called the Bid. Each Bidder shall submit his bid as under:
  - a) Bidder shall submit his **TECHNICAL PROPOSAL** and **FINANCIAL PROPOSAL** in separate inner envelopes and enclosed in a single outer envelope.
  - b) **ORIGINAL** and each copy of the Bid shall be separately sealed and put in separate envelopes and marked as such.
  - (c) The envelopes containing the **ORIGINAL** and copies will be put in one sealed envelope and addressed / identified as given in **BDS**.

- viii) The inner and outer envelopes shall:
  - a) be addressed to the Procuring Agency at the address provided in the BDS;
  - b) bear the name and identification number of the contract as defined in the BDS; and provide a warning not to open before the time and date for bid opening, as specified in the BDS, pursuant to ITB 2.4.2;
  - c) In addition to the identification required in Sub- Clause (b) hereof, the inner envelope shall indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared “late” pursuant to ITB.2.4.3.

#### **2.4.2 Deadline for Submission of Bids**

- ix) If all envelopes are not sealed and marked as required by **ITB 2.4.1** or incorrectly marked, the Procuring Agency will assume no responsibility for the misplacement or premature opening of Bid.
  - i) Bids must be received by the Procuring Agency at the address specified under BDS no later than the time and date specified in the Bid Data Sheet. Bids received through courier services shall not be entertained.
  - ii) The Procuring Agency may, at its discretion and as per rule 29 of PPR-14, extend this deadline for the submission of Bids by amending the Bidding documents in accordance with ITB Clause 2.2.2 & 2.2.3 in which case all rights and obligations of the Procuring Agency and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

#### **2.4.3. Late Bids**

- iii) Bids shall be received by the Procuring Agency at the address specified under **BDS** no later than the date and time specified in the **BDS**.
  - i) Any Bid received by the Procuring Agency after the deadline for submission of Bids prescribed by the Procuring Agency pursuant to ITB Clause 2.4.2 will be rejected and returned unopened to the Bidder.
  - ii) The Procuring Agency shall not consider for evaluation any Bid that arrives after the deadline for submission of Bids.
  - iii) Any Bid received by the Procuring Agency after the deadline for submission of Bids shall be declared late, recorded, rejected and returned unopened to the Bidder.



#### **2.4.4 Modification and Withdrawal of Bids**

- i) The Bidder may modify or withdraw its Bid after the Bid's submission, provided that written notice of the modification, including substitution or withdrawal of the Bids, is received by the Procuring Agency prior to the deadline prescribed for submission of Bids.
- ii) The Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and dispatched in accordance with the provisions of Clause (i) A withdrawal notice may also be sent by email, but followed by a signed confirmation copy, postmarked not later than the deadline for submission of Bids.
- iii) No Bid may be modified after the deadline for submission of Bids.
- iv) No Bid may be withdrawn in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder on the Bid Form. Withdrawal of a Bid during this interval may result in the Bidder's forfeiture of its Bid security (along with other remedies available under PPR-14), pursuant to the ITB Clause 2.3.8 (vii).
- v) A Bidder may withdraw its Bid after it has been submitted, provided that written notice of the withdrawal of the Bid, is received by the Procuring Agency prior to the deadline for submission of Bids.
- vi) Revised bid may be submitted after the withdrawal of the original bid before the deadline for submission of Bids.

#### **2.5. Opening and Evaluation of Bids**

##### **2.5.1 Opening of Bids by the Procuring Agency**

- i) The Procuring Agency will open all Bids, in public, in the presence of Bidders' or their representatives who choose to attend, and other parties with a legitimate interest in the Bid proceedings at the place, on the date and at the time, specified in the **BDS**. The Bidders' representatives present shall sign a register/attendance sheet as proof of their attendance.

- ii) First, envelopes marked “WITHDRAWAL” shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding Withdrawal Notice contains a valid authorization to request the withdrawal and is read out at bid opening-
- iii) Second, outer envelopes marked “SUBSTITUTION” shall be opened. The inner envelopes containing the Substitution Bid shall be exchanged for the corresponding Original Bid being substituted, which is to be returned to the Bidder unopened. No envelope shall be substituted unless the corresponding Substitution Notice contains a valid authorization to request the substitution and is read out and recorded at bid opening.
- iv) Next, outer envelopes marked “MODIFICATION” shall be opened. No Technical Proposal and/or Financial Proposal shall be modified unless the corresponding Modification Notice contains a valid authorization to request the modification and is read out and recorded at the opening of the Bids. Any Modification shall be read out along with the Original Bid except in case of Single Stage Two Envelope Procedure where only the Technical Proposal, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Financial Proposal, both Original and Modification, will remain unopened till the prescribed financial bid opening date.
- v) Other envelopes holding the Bids shall be opened one at a time, in case of Single Stage One Envelope Procedure, the Bidders names, the Bid prices, the total amount of each Bid, the presence or absence of Bid Security, Bid Securing Declaration and such other details as the Procuring Agency may consider appropriate, will be announced by the Procurement Evaluation Committee.
- vi) In case of Single Stage Two Envelope Procedure, the Procuring Agency will open the Technical Proposals in public at the address, date and time specified in the **BDS** in the presence of Bidders` designated representatives who choose to attend and other parties with a legitimate interest in the Bid proceedings. The Financial Proposals will remain unopened and will be held in custody of the Procuring Agency until the specified time of their opening.

- vii) The envelopes holding the Technical Proposals shall be opened one at a time, and the following read out and recorded: (a) the name of the Bidder; (b) the presence of a Bid Security, if required; and (c) Any other details as the Procuring Agency may consider appropriate.
- viii) Bidders are advised to send in a representative with the knowledge of the content of the Bid who shall verify the information read out from the submitted documents. Failure to send a representative or to point out any un-read information by the sent Bidder's representative shall indemnify the Procuring Agency against any claim or failure to read out the correct information contained in the Bidder's Bid.
- ix) No Bid will be rejected at the time of Bid opening except for late Bids which will be returned unopened to the Bidder, pursuant to **2.4.3 (i)**.
- x) The Procuring Agency shall prepare minutes of the Bid opening. The record of the Bid opening shall include, as a minimum: the name of the Bidder and whether or not there is a withdrawal, substitution or modification, the Bid price if applicable.
- xi) The Bidders' representatives who are present shall be requested to sign on the attendance sheet. The omission of a Bidder's signature on the record shall not invalidate the contents and affect the record.
- xii) Minutes of the Financial Bid Opening shall be recorded and uploaded by the procuring agency on its website or shared to all bidders through e-mail.  
*[if Procuring Agency opts for single stage one envelope procedure as per rule 38(1) of PPR-14, clause (vi) to (xiii) should be formulated accordingly by the procuring agency.]*

**2.5.2  
Confidentiality**

- i) Information relating to the examination, clarification, evaluation and comparison of Bids and recommendation of contract award shall not be disclosed to Bidders or any other persons not officially concerned with such process until the time of the announcement of the respective evaluation report in accordance with the requirements of rule 37 of PPR-14.
- ii) Any effort by a Bidder to influence the Procuring Agency processing of Bids or award decisions may result in the rejection of its Bid.

### **2.5.3 Clarification of Bids**

- iii) Notwithstanding **ITB Clause 2.2.2** from the time of Bid opening to the time of contract award, if any Bidder wishes to contact the Procuring Agency on any matter related to the Bidding process, it should do so in writing or in electronic forms that provides record of the content of communication.
- i) As per rule 33(2) of PPR-14, to assist in the examination, evaluation and comparison of Bids and post-qualification of the Bidders, the Procuring Agency may, at its discretion, ask any Bidder for a clarification of its Bid including breakdown of prices to determine its reasonability. Any clarification submitted by a Bidder that is not in response to a request by the Procuring Agency shall not be considered.
- ii) The request for clarification and the response shall be in writing or in electronic forms that provide record of the content of communication. In case of Single Stage Two Envelope Procedure, no change in the prices or substance of the Bid shall be sought, offered, or permitted. Whereas in case of Single Stage One Envelope Procedure, only the correction of arithmetic errors discovered by the Procuring Agency in the evaluation of Bids should be sought in accordance with ITB Clause 2.5.6.
- iii) The alteration or modification in The Bid which in any way affect the following parameters will be considered as a change in the substance of a bid:
  - a) Evaluation & qualification criteria;
  - b) Required scope of work or specifications;
  - c) All securities requirements;
  - d) Tax requirements;
  - e) Terms and conditions of bidding documents.
  - f) Change in the ranking of the Bidder
- iv) From the time of Bid opening to the time of Contract award if any Bidder wishes to contact the Procuring Agency on any matter related to the Bid it should do so in writing or in electronic forms that provide record of the content of communication.

### **2.5.4 Preliminary Examination**

- i) The Procuring Agency will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order.

- ii) Arithmetical errors will be rectified on the following basis: -
  - a. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected. If the Supplier does not accept the correction of the errors, its Bid may be rejected, and its Bid security may be forfeited.
  - b. If there is a discrepancy between words and figures, the amount in words will prevail.
- iii) Prior to the detailed evaluation, the Procuring Agency will determine the responsiveness of each Bid to the Bidding documents, pursuant to ITB Clause 2.5.5. For purposes of these Clauses, a responsive Bid is one which conforms to all the terms and conditions of the Bidding documents without material deviations. Deviations from, or objections or reservations to critical provisions, **such as** those concerning **Bid Security** (ITB Clause 2.3.8), **Applicable Law** (GCC Clause 30), **Taxes and Duties** (GCC Clause 32) & mandatory Registrations/ Renewals will be deemed to be a material deviation. The Procuring Agency's determination of a Bid's responsiveness is to be based on the contents of the Bid itself without recourse to extrinsic evidence.
- iv) If a Bid is not responsive, it will be rejected by the Procuring Agency and may not subsequently be made responsive by the Bidder by correction of the non-conformity.
- v) Prior to the detailed evaluation of Bids, the Procuring Agency will determine whether each Bid:
  - a) Meets the eligibility criteria defined in **ITB 2.1.3** and **ITB 2.1.4**;
  - b) Has been prepared as per the format and contents defined by the Procuring Agency in the Bidding Documents;
  - c) Has been properly signed;
  - d) Is accompanied by the required securities; and
  - e) Is responsive to the requirements of the Bidding Documents.

The Procuring Agency's determination of a Bid's responsiveness will be based on the contents of the Bid itself.

**2.5.5 Examination of Terms and Conditions;**

- i) The Procuring Agency shall examine the Bid to confirm that all terms and conditions specified in the **GCC** and the **SCC** have

**Technical Evaluation**

been accepted by the Bidder without any material deviation or reservation.

- ii) The Procuring Agency shall evaluate the technical aspects of the Bid submitted to confirm that all requirements specified in **Section III-Technical Specifications, Section VII – Schedule of Requirements & Evaluation Criteria as provided in BDS**, have been met without material deviation or reservation.
- iii) If after the examination of the terms and conditions and the technical evaluation, the Procuring Agency determines that the Bid is not responsive in accordance, it shall reject the Bid.

**2.5.6 Correction of Errors**

- i) Bids determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows: -
  - a) If there is a discrepancy between unit prices and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected, unless in the opinion of the Procuring Agency there is an obvious misplacement of the decimal point in the unit price, in which the total price as quoted shall govern and the unit price shall be corrected;
  - b) If there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and the total shall be corrected; and
  - c) Where there is a discrepancy between the amounts in figures and in words, the amount in words will govern.
  - d) Where there is discrepancy between grand total of price schedule and amount mentioned on the Form of Bid, the amount referred in Price Schedule shall be treated as correct subject to elimination of other errors.
- ii) The amount stated in the Bid will, be adjusted by the Procuring Agency in accordance with the above procedure for the correction of errors. The concurrence of the Bidder shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, its Bid will then be rejected, and the Bid Security may be forfeited or the Bid Securing Declaration may be executed in accordance with **ITB 2.3.8**.

**2.5.7 Conversion to Single Currency**

- i) As per rule 32(2) of PPR-14, to facilitate evaluation and comparison, the Procuring Agency will convert all Bid prices expressed in the amounts in various currencies in which the Bid prices as follows:

For the purposes of comparison of bids quoted in different currencies, the price shall be converted into a single currency specified in the bidding documents. The rate of exchange shall be the selling rate,

prevailing on the date of opening of bids specified in the bidding documents, as notified by the State Bank of Pakistan on that day, in case of holiday in State Bank of Pakistan on the day of opening financial bids, then previous working day's ex-change rates will prevail.

#### **2.5.8 Post - Qualification & Evaluation of Bids**

- i) In the absence of **prequalification**, the Procuring Agency will determine to its satisfaction whether the Bidder is qualified to perform the contract satisfactorily, in accordance with the evaluation criteria listed in BDS & pursuant to ITB Clause 2.1.3.
- ii) The determination will take into account the Bidder's financial, technical, and production/ supplying capabilities. It will be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB Clause 2.3.6, as well as such other information required for eligibility/qualification expressed in Bid Data Sheet as the Procuring Agency deems necessary and appropriate.
- iii) The Procuring Agency will **technically evaluate** and compare the Bids which have been determined to be responsive, pursuant to ITB Clause 2.5.5, as per Technical Specifications required.
- iv) The **financial evaluation** of a Bid will be on the basis of form of Price Schedules/ Financial Bid Form 8.10 to be decided by the Procuring Agency which must include clear cut instruction regarding item wise or lot wise evaluation inclusive of prevailing taxes, duties, fees etc.

#### **2.5.9 Contacting the Procuring Agency**

- i) Subject to ITB Clause 2.5.3, no Bidder shall contact the Procuring Agency on any matter relating to its Bid, from the time of the Bid opening to the time the evaluation report is made public i.e., **10 days before the contract is awarded**. If the Bidder wishes to bring additional information or has grievance to the notice of the Procuring Agency, it should do so in writing.
- ii) Any effort by a Bidder to influence the Procuring Agency during Bid evaluation, or Bid comparison may result in the rejection of the Bidder's Bid.

#### **2.5.10 Grievance Redressal**

- i) As per Rule-67 of PPR-14, Procuring Agency shall constitute a Grievance Redressed Committee (GRC) comprising of odd number of persons with proper powers and authorization to address the complaints. The GRC shall not have any of the

Committee may preferably have one subject specialist depending upon the nature of the procurement in addition to one person with legal background as per their availability to the Procuring Agency.

- ii) Any Bidder feeling aggrieved can file its written complaint against the eligibility parameters or any other terms and conditions prescribed in the Bidding documents found contrary to provision of Rule 33, and the same shall be addressed by the Procuring Agency well before the proposal submission deadline.
- iii) Any party can file its written complaint against the eligibility parameters or any other terms and conditions prescribed in the bidding documents found contrary to provision of Rule 34 and the same shall be addressed by the Procuring Agency well before the proposal submission deadline.
- iv) Any Bidder feeling aggrieved by any act of the Procuring Agency after the submission of his Bid may lodge a written complaint concerning his grievances **not later than ten (10) days after the announcement of the Final evaluation reports**. In case of single stage - two envelope bidding procedure any bidder feeling aggrieved from technical evaluation may file a grievance **within five (05) days of announcement of the technical evaluation report**. After completion of the technical evaluation process, the procuring agency shall immediately upload the technical evaluation report on the website of PPRA and Procuring Agency for obtaining/ receiving grievance petitions from the prospective bidders (if any).
- v) In case, the complaint/grievance is filed after the issuance of the final evaluation report, the complainant cannot raise any objection on technical evaluation of the report. Provided that the complainant may raise the objection on any part of the final evaluation report in case where single stage one envelop bidding procedure is adopted.
- vi) The GRC shall investigate and decide upon the complaint within fifteen days of the receipt of the complaint. Mere fact of lodging of a complaint shall not warrant suspension of the procurement process.

## 2.6. Award of Contract



### 2.6.1 Notification of Award

- i) Prior to the expiration of the period of Bid validity, the Procuring Agency will notify the successful Bidder in writing by registered letter and by email to be confirmed in writing by registered letter, that its Bid has been accepted.
- ii) The notification of award will constitute the formation of the Contract.
- iii) Upon the successful Bidder's furnishing of the Performance Guarantee pursuant to ITB Clause 2.6.2 (i), the Procuring Agency will promptly notify each unsuccessful Bidder and will discharge its Bid security, pursuant to ITB Clause 2.3.8 (v).

### 2.6.2 Performance Guarantee

- i) **Within twenty-eight (28) days of the issuance of notification of award from the Procuring Agency**, the successful Bidder shall furnish the Performance Guarantee in accordance with the Conditions of Contract, in the Performance Guarantee Form provided in the Bidding documents, or in another form acceptable to the Procuring Agency.
- ii) Failure of the successful Bidder to comply with the requirement of ITB Clause (i) above or ITB Clause 2.6.3 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid security along with other remedies available under PPR-14. After that, the Procuring Agency may decide to award the contract to the next lowest evaluated Bidder, keeping in view the Bid validity time, or call for new Bids keeping in view the concept of value for money as defined under rule-2(ae) read with Principles of Procurement as enunciated in rule-4 of PPR-14.

### 2.6.3 Signing of Contract/ Issuance of Purchase Order

- i) At the same time as the Procuring Agency notifies the successful Bidder that its Bid has been accepted, the Procuring Agency will send the Bidder the Contract Form provided in the Bidding documents, incorporating all agreements between the parties or will issue the purchase order *[as the case may be]*.
- ii) Under rule-63 of PPR-14, where the Procuring Agency requires formal signing of contract, **within seven (07) days of issuance of the Contract Form**, the successful Bidder shall sign and mention date of the contract and return it to the Procuring Agency.
- iii) Where no such formal signing is required by the procuring agency, the procuring agency shall issue purchase order after

the receipt of required performance guarantee, as per rule 55 of PPR-14.

#### **2.6.4 Award Criteria**

- i) Subject to ITB Clause 2.6.2, under rule-55 of PPR-14, the Procuring Agency will award the contract to the successful Bidder whose Bid has been determined to be responsive and has been determined to be the lowest evaluated Bid, provided that the Bidder has been determined to be qualified to perform the contract satisfactorily.

#### **2.6.5 Procuring Agency's Right to Vary Quantities at Time of Award**

- i) The Procuring Agency reserves the right at the time of contract award to increase or decrease the quantity of goods and services originally specified in the Schedule of Requirements without any change in unit price or other terms and conditions, on the analogy of rule-59 (c)(iv) of PPR-14 (**not more than 15%**).

#### **2.6.6 Procuring Agency's Right to Accept or Reject All Bids**

- i) As per rule 35 of PPR-14, the Procuring Agency reserves the right to accept or reject all Bids or proposals (and to annul the Bidding process) at any time prior to the acceptance of any Bid or proposal, without thereby incurring any liability towards the Bidders.
- ii) The Bidders shall be promptly informed about the rejection of the Bids, if any
- iii) The Procuring Agency shall upon request communicate to any Bidder, the grounds for its rejection of all Bids or proposals, but shall not be required to justify those grounds.

#### **2.6.7 Re-Bidding**

- i) If the Procuring Agency rejects all the Bids under rule 35, it may proceed with the process of fresh Bidding but before doing that it shall assess the reasons for rejection and may, if necessary, revise specifications, evaluation criteria or any other condition for Bidders.

#### **2.6.8 Corrupt or Fraudulent Practices**

- i) The Procuring Agency Bidders, Suppliers, and Contractors observe the highest standard of ethics during the procurement and execution of contracts.

“Corrupt practices” in respect of procurement process, shall be as given in S-2 (d) of PPRA, Act, 2009, which is as follows:

*“(d) “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official, bidder or Contractor in the procurement process or in Contract execution to the detriment of the procuring agency;*

*or misrepresentation of facts in order to influence a procurement process or the execution of a Contract, collusive practices among bidders (prior to or after bid submission) designed to establish bid prices at artificial, noncompetitive levels and to deprive the procuring agency of the benefits of free and open competition and any request for, or solicitation of anything of value by any public official in the course of the exercise of his duty; it may include any of the following:*

- i. Coercive practice by impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence the actions of a party to achieve a wrongful gain or to cause a wrongful loss to another party;*
- ii. Collusive practice by arrangement between two or more parties to the procurement process or Contract execution, designed to achieve with or without the knowledge of the procuring agency to establish prices at artificial, noncompetitive levels for any wrongful gain;*
- iii. Offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence the acts of another party for wrongful gain;*
- iv. Any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;*
- v. Obstructive practice by harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a Contract or deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements before investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or acts intended to materially impede the exercise of inspection and audit process.”*

**ii) Blacklisting & Debarment:**

Blacklisted Consultants and those found involved in “Corrupt Practices” are not allowed to participate in bidding.

**Requirements & Procedure for Blacklisting & Debarment:** As per S-17A of PPRA, Act, 2009:

**“17A. Blacklisting.** – (1) A procuring agency may, for a specified

*period and in the prescribed manner, debar a bidder or Contractor from participating in any public procurement process of the procuring agency, if the bidder or Contractor indulges in corrupt practice or any other prescribed practice.*

- (2) *The Managing Director may, in the prescribed manner, debar a bidder or Contractor from participating in any public procurement process of all or some of the procuring agencies for a specified period.*
- (3) *Any person, aggrieved from a decision of a procuring agency, may within prescribed period prefer a representation before the Managing Director.*
- (4) *A procuring agency or any other person, aggrieved from a decision of the Managing Director, may within prescribed period prefer a representation before the Chairperson whose decision on such representation shall be final.]*

*As per rule 21 of PPR-14:*

**21. Blacklisting.**

- (1) *A procuring agency may, for a specified period, debar a bidder or Contractor from participating in any public procurement process of the procuring agency, if the bidder or Contractor has:*
  - a) *acted in a manner detrimental to the public interest or good practices;*
  - b) *consistently failed to perform his obligation under the Contract;*
  - c) *not performed the Contract up to the mark; or*
  - d) *indulged in any corrupt practice.*
- (2) *If a procuring agency debars a bidder or Contractor under sub-rule (1), the procuring agency:*
  - a) *shall forward the decision to the Authority for publication on the website of the Authority; and*
  - b) *may request the Authority to debar the bidder or Contractor for procurement of all procuring agencies.*
- (3) *The Managing Director may debar a bidder or Contractor of any procuring agency from participating in any public procurement process of all or some of the procuring agencies for such period as the Managing Director may determine.*
- (4) *Any person aggrieved by a declaration made under rule 20 or a decision under sub-rule (1) of this rule may, within thirty days from the date of the publication of the information on the website of the Authority, file a representation before the*

*Managing Director and the Managing Director may pass such order on the representation as he may deem fit.*

- (5) Any person or procuring agency aggrieved by an order under sub-rule (3) or (4) may, within thirty days of the order, file a representation before the Chairperson and the Chairperson may pass such order on the representation as he may deem appropriate.*
- (6) The mechanism or process for barring a bidder or Contractor from participating in procurement process of a procuring agency, procuring agencies and a representation under this rule is specified in the Schedule appended to these rules.*

*As per Schedule appended with PPR-14:*

#### **SCHEDULE**

*see sub-rule (6) of rule 21*

#### **BLACKLISTING MECHANISM OR PROCESS**

- 1. The procuring agency may, on information received from any resource, issue show cause notice to a bidder or Contractor.*
- 2. The show cause notice shall contain:*
  - (a) precise allegation, against the bidder or Contractor;*
  - (b) the maximum period for which the procuring agency proposes to debar the bidder or Contractor from participating in any public procurement of the procuring agency; and*
  - (c) the statement, if needed, about the intention of the procuring agency to make a request to the Authority for debarring the bidder or Contractor from participating in public procurements of all the procuring agencies.*
- 3. The procuring agency shall give minimum of seven days to the bidder or Contractor for submission of written reply of the show cause notice.*
- 4. In case, the bidder or Contractor fails to submit written reply within the requisite time, the procuring agency may issue notice for personal hearing to the bidder or Contractor/ authorize representative of the bidder or Contractor and the procuring agency shall decide the matter on the basis of available record and personal hearing, if availed.*
- 5. In case the bidder or Contractor submits written reply of the show cause notice, the procuring agency may decide to file the matter or direct issuance of a notice to the bidder or Contractor for personal hearing.*

6. *The procuring agency shall give minimum of seven days to the bidder or Contractor for appearance before the specified officer of the procuring agency for personal hearing.*
7. *The procuring agency shall decide the matter on the basis of the available record and personal hearing of the bidder or Contractor, if availed.*
8. *The procuring agency shall decide the matter within fifteen days from the date of personal hearing unless the personal hearing is adjourned to a next date and in such an eventuality, the period of personal hearing shall be reckoned from the last date of personal hearing.*
9. *The procuring agency shall communicate to the bidder or Contractor the order of debarring the bidder or Contractor from participating in any public procurement with a statement that the bidder or Contractor may, within thirty days, prefer a representation against the order before the Managing Director of the Authority.*
10. *The procuring agency shall, as soon as possible, communicate the order of blacklisting to the Authority with the request to upload the information on its website.*
11. *If the procuring agency wants the Authority to debar the bidder or Contractor from participating in any public procurement of all procuring agencies, the procuring agency shall specify reasons for such dispensation.*
12. *The Authority shall immediately publish the information and decision of blacklisting on its website.*
13. *In case of request of a procuring agency under para 11 or representation of any aggrieved person under rule 21, the Managing Director shall issue a notice for personal hearing to the parties and call for record of proceedings of blacklisting. The parties may file written statements and documents in support of their contentions.*
14. *In case of representation of any aggrieved person or procuring agency under rule 21, the Chairperson shall issue a notice for personal hearing to the parties and may call for the record of the proceedings. The parties may file written statements and documents in support of their contentions.*
15. *In every order of blacklisting under rule 21, the procuring agency shall record reasons of blacklisting and also reasons for short, long or medium period of blacklisting.*
16. *The Authority shall upload all the decisions under rule 21, available with it, on its website. But the name of a bidder or Contractor shall immediately be removed from the list of blacklisted persons on expiry of period of blacklisting or order of the competent authority to that effect, whichever is earlier.*

17. *An effort shall be made for electronic communication of all the notices and other documents pursuant to this mechanism or process.”*
- iii) Furthermore, Bidders must keep themselves aware of the provision stated in clause 5.4 and clause 24.1 of the General Conditions of Contract.

### Section-III. Technical Specifications

#### LOT # 01

#### Turnkey Solution Comprising E-Ticketing System, Ai Integrable IP Based Cameras, Fleet Management System, Safari Animal Webcam, IT Infrastructure and Datacenter for Lahore Safari

#### Item 1: E-Ticketing and Queue Management System

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>E-Ticketing and Queue Management (Equipment)</b>				
1	Touch Screen E-Ticketing Point-of-Sale Terminal with Customer Display	21		
2	High-Speed Thermal Ticketing Printer	21		
3	High-Quality Thermal Paper Rolls (required for the thermal printers)	L.S		
4	Cash Management Drawer	21		
5	LED Gender/Information Signage Display Board	26		
6	Cordless Industrial Handheld Barcode Scanner with WiFi connectivity	09		
7	Queue Flapper Gate with stainless steel, glass barrier, RFID/QR Code/Barcode access control, anti-passback	14		
8	Automatic Parking Barrier with durable steel construction, weather-resistant powder coating and safety features.	07		
9	IP67 Waterproof GPS Tracking Bracelet/band with SOS Button Emergency	100		

#### **E-TICKETING AND QUEUE MANAGEMENT (EQUIPMENT)**

##### **Minimum System Requirement**

**Project Scope:** Lahore Safari Parking and Visitor Ticketing System

The Lahore Safari Parking and Visitor Ticketing System will encompass the design, development, and implementation of an E-Ticketing solution for efficient management of the Lahore Safari visitor experience, including parking facilities and ticketing operations.

##### **System Deployment:**

The system will be self-hosted to ensure data security and quick response times. It will be compatible with various platforms, including Windows, Linux, macOS, and Android. Server requirements will be met to host the application and database efficiently.

##### **Database Management:**

The SQL-based database will be structured for managing data related to visitor ticketing, parking, and related operations.

##### **User Interface:**

The user interface will include role-based access control for different user categories, such as administrators, cashiers, and managers.



It will feature a user-friendly and intuitive design that is responsive across various devices, including desktops, tablets, and mobile phones.

**Functionality:**

**Visitor Ticketing:**

Creation, processing, and management of visitor ticket sales transactions.

A product catalog to manage various types of tickets, pricing, and attributes.

Customer management to store visitor information and purchase history.

Integration with multiple payment gateways for a convenient payment process.

Reporting and analytics tools for generating sales reports and insights.

**Parking Management:**

Inventory management for parking spots, monitoring availability, and issuing alerts for full parking lots.

Order fulfillment, which includes managing parking reservations and tracking entry and exit.

Promotions and Discounts:

Capability to apply discounts, promotions, and special offers.

**Business Intelligence:**

Tools for gathering insights into visitor behavior and business performance, enabling data-driven decisions.

**Integration:**

APIs will be provided for third-party integrations, such as accounting and CRM systems.

Hardware integration with receipt printers, barcode scanners, and more for efficient operations.

Payment gateways will be integrated to offer a variety of payment options for visitors.

**Security:**

Sensitive data, including visitor information and transactions, will be encrypted.

Secure user authentication and login mechanisms will be implemented.

Audit trails will monitor and track user actions to ensure accountability.

Automated database backups will be scheduled for data protection.

**Scalability:**

The system will be designed to handle high transaction volumes effectively.

Support for load balancing and scaling out to accommodate growing visitor numbers.

**Localization:**

The system will support localization for various languages and currency conversions.

**Support and Maintenance:**

Comprehensive documentation will be provided for users and administrators.

Technical support options will be available, including support plans, forums, and helpdesk assistance.

**Regulatory Compliance:**

The system will ensure compliance with the Payment Card Industry Data Security Standard (PCI-DSS) and the General Data Protection Regulation (GDPR), where applicable.

**Performance Requirements:**

The system will aim to achieve minimal response times for user actions.

Efficient database performance will be maintained to enable quick data retrieval.

This project aims to provide Lahore Safari with an advanced E-Ticketing system that enhances visitor experiences, ensures data security, offers convenience through multiple payment options, and empowers the management with valuable insights for continuous

improvements. The system will help streamline parking operations and provide visitors with a seamless ticketing process while adhering to relevant standards and regulations.

### **Minimum Specifications for Touch Screen E-Ticketing Point-Of-Sale Terminal with Customer Display**

#### **Hardware:**

Processor: Core i5, 2.4 GHz clock speed, RAM: 8 GB, Storage: 256 GB Connectivity: Ethernet port, Wi-Fi, Bluetooth.

#### **Display:**

Touchscreen: Capacitive, 12-inch diagonal size.  
Resolution: Full HD (1920 x 1080 pixels).

#### **Operating System:**

Android, Windows

#### **Ports:**

4 USB ports for peripherals, 1 Ethernet port, 1 Wi-Fi antenna port, 1 Bluetooth antenna port.

#### **Wireless Connectivity:**

Built-in Wi-Fi, Bluetooth 5.0.

#### **Security:**

Biometric fingerprint scanner, RFID card reader.

#### **Customer Display:**

LED Display: Bright and clear LED display for easy visibility.  
Minimum 2-line display for showing transaction information.  
Adjustable Stand: Flexible stand for optimal viewing angle.  
USB or Serial: Easy connectivity to the POS terminal.  
Transaction Details: Display transaction amount, items purchased, and payment information.  
Promotions (Optional): Ability to display promotional messages or advertisements.

#### **Physical Design:**

Sturdy and compact design, IP65 rated for dust and water resistance, MIL-STD-810G compliant for durability.

#### **Power:**

Power supply: 12 VDC, 3.3 A. or power optimized

#### **Environmental Requirements:**

As per local weather conditions

#### **Certifications:**

CE, FCC, RoHS compliant.

#### **Compatibility:**

POS Application: Compatible with e-ticketing POS application.  
Integration: Integration with other components of the system, such as the data center, barcode scanners, and customer displays.

#### **Customization:**

Configurable settings for tailored usage, such as the language, currency, and tax rates.

#### **Warranty:**

Warranty Period: 1 year.

### **MINIMUM SPECIFICATIONS FOR HIGH-SPEED THERMAL TICKETING PRINTER:**

#### **Printing Technology:**

Thermal printing technology for fast and high-quality ticket printing.

**Printing Speed:**

Minimum printing speed of 200 mm/s.

**Paper Roll Compatibility:**

Compatible with standard 80mm thermal paper rolls.

**Print Resolution:**

High-resolution printing for clear text and graphics (minimum 300 dpi).

**Connectivity:**

USB and Ethernet ports for easy integration with the POS system.

**Auto Cutter:**

Built-in auto cutter for precise ticket cutting after printing.

**Reliability:**

Long-lasting and reliable performance for continuous operation.

**Power:**

Power supply: 12 VDC, 2 A. or power optimized

**Environmental Requirements:**

As per local weather conditions

**Certifications:**

CE, FCC, RoHS compliant.

**Compatibility:**

Seamless integration with POS and ticketing systems.

**Warranty:**

Warranty Period: 1 year.

**MINIMUM SPECIFICATIONS FOR CASH MANAGEMENT DRAWER:**

**Design and Build:**

Robust Construction: Durable metal construction to withstand regular use.

Size: Standard dimensions to accommodate different currency notes and coins.

**Locking Mechanism:**

Keyed Lock: Secure locking mechanism with key access.

Manual Release: Emergency manual release in case of power failure.

**Compartments:**

Currency Slots: Adjustable currency compartments for various denominations.

Coin Trays: Removable coin trays for organized storage.

**MINIMUM SPECIFICATIONS FOR LED GENDER/INFORMATION SIGNAGE DISPLAY BOARD**

**General Specifications:**

Type: LED Signage Gender Board

Housing: Durable, lightweight, and weather-resistant aluminum housing

Installation: Wall mountable or ceiling suspension options

**Display and Illumination:**

Display Type: LED Illuminated Display

Display Area: at least 100 square inches

Light Color: Blue for Male, Pink for Female (customizable)

Brightness: Adjustable brightness levels for varying lighting conditions

Viewing Angle: Wide viewing angle for visibility from different directions

Day/Night Mode: Auto-adjusts brightness for optimal visibility during different times

**Text and Symbols:**

Gender Icons: Clear male and female icons for easy identification  
Text Labels: "Male" and "Female" labels for enhanced clarity (optional)  
Customization: Ability to display custom text or icons if required

**Wireless Control:**

Connectivity: Bluetooth connectivity for remote control  
Control App: Mobile app for easy management of LED settings  
Control Features: On/off, brightness adjustment, display mode selection

**Power and Energy Efficiency:**

Power Input: Standard AC power (110-240V), Power optimized  
Energy Efficiency: Utilizes energy-efficient LED technology  
Auto-Sleep Mode: Automatically enters sleep mode during off-peak hours

**Environmental Considerations:**

Indoor/Outdoor Use: Suitable for both indoor and sheltered outdoor environments  
Weatherproofing: IP65-rated for protection against dust and water ingress

**Safety and Compliance:**

Safety Standards: Complies with relevant electrical and safety standards  
Certifications: CE, FCC, RoHS compliant

**Customization and Branding:**

Custom Branding: Ability to customize board with branding elements  
Color Options: Customizable LED colors to match branding aesthetics

**Mounting and Installation:**

Mounting Options: Wall mountable using brackets or hooks, or ceiling suspension  
Ease of Installation: User-friendly installation process

**Minimum Specifications for Cordless Industrial Handheld Barcode Scanner with WiFi connectivity**

**Wireless Connectivity:** Bluetooth 5.0

**Physical Specifications:**

Housing: Ruggedized, IP65 rated for durability and resistance to dust and water ingress

**Scan Performance:**

Scan Engine: High-performance laser engine  
Scan Rate: 20 scans per second  
Scan Range: 0 to 200 cm (adjustable for specific use cases)  
Supported Symbologies: Bar code and QR Code.

**Battery and Power:**

Battery Type: Rechargeable Lithium-ion  
Battery Capacity: 2,600 mAh  
Operating Time: Up to 14 hours of continuous scanning  
Charging Time: 3 hours (typical)

**User Interface:**

Display: 2.4-inch color LCD display  
Keypad: 10 physical keys  
Feedback: LED indicators, vibration, and audible alerts

**Wireless Connectivity:**

Bluetooth Range: Up to 100 meters  
Wireless Security: WPA2 encryption for secure data transmission

**Data Storage:**

Internal Memory: 8 GB for offline data storage

**Environmental Conditions:**

Operating Temperature: as per local weather conditions, weather resistant. Indoor and outdoor usage

**Software and Compatibility:**

Supported OS: Windows, Android, iOS

SDK Availability: Software Development Kit (SDK) for custom application development

Firmware Updates: Over-the-air firmware updates for continuous improvement

**Accessories:**

Charging Cradle: Optional docking station for convenient charging and storage

Carrying Options: Holster, wrist strap, belt clip

**Certifications:**

Environmental: IP65

**MINIMUM SPECIFICATIONS FOR FLAPPER GATES**

**Type:** Flapper gates with stainless steel glass barrier, RFID/QR Code/ Barcode access control, anti-pass back

**Scanning mode:** Built-in QR/RFID scanner

**Power Requirements:** power optimized

**Working Temperature:** As per local weather conditions

**Working Humidity:** 5% to 80%

**Working Environment:** Indoor/outdoor

**Speed of Throughput:** 25/ minute

**Dimension (L\*W\*H):** 1150\*300\*1000 (mm)

**LED Indicator support:** Yes

**Lid Material:** Stainless Steel or higher

**Barrier Material:** Acrylic (optional: tempered glass)

**Barrier Movement:** Retracting

**Emergency Mode:** Supported

**Warranty:** 1 year

**MINIMUM SPECIFICATIONS FOR AUTOMATIC PARKING BARRIER WITH DURABLE STEEL CONSTRUCTION, WEATHER-RESISTANT POWDER COATING AND SAFETY FEATURES.****General Specifications:**

Type: Automatic Parking Barrier

Operation: Electrically powered

Material: Durable steel construction

Finish: Weather-resistant powder coating

Color: Standard color options available

Dimensions (LxWxH): 328mm x 286mm x 934mm (can be change as per the site requirement)

**Barrier Arm:**

Arm Length: 3m / 6m

Arm Material: Aluminum alloy

Arm Shape: Rectangular

Arm Color: Standard color options available

Opening/Closing Time: 3s / 6s

**Motor and Drive:**

Motor Type: Brushless DC motor

Power Supply/ consumption: should be optimized

**Manual Release:**

Manual release mechanism for emergencies

**Safety Features:**

Safety Sensors: Infrared photocells for obstacle detection

Auto Reverse: Barrier arm automatically reverses upon obstacle detection

LED Lights: Integrated LED lights for visibility

Reflective Stickers: High-visibility reflective stickers on the arm

Anti-Crash Mechanism: Mechanism to prevent arm from crashing down

**Control and Operation:**

Remote Control: Wireless remote control included

Access Control: Compatibility with various access control systems

Manual Operation: Manual control option in case of power failure

Operating Modes: Standard open/close, free entry, timed operation, etc.

Integration: Can be integrated with parking management software

**Environmental and Operating Conditions:**

Weather Resistance: Suitable for outdoor use in various weather conditions

**Mounting and Installation:**

Mounting Options: Surface mount or in-ground mount

Base Plate: Included for surface mount installation

Anchors: Anchors provided for in-ground installation

Installation Manual: Detailed installation manual included

**Warranty:**

Warranty Period: 1 year

**MINIMUM SPECIFICATIONS FOR IP67 WATERPROOF GPS TRACKING BRACELET/BAND WITH SOS BUTTON EMERGENCY**

**General Specifications:**

Form Factor: Wristband, watch, or similar wearable form factor

Weight: Lightweight and comfortable for extended wear

Battery: 1000mAH (along with charging station)

Water Resistance: IP67

GPS Accuracy: Up to 16 meters (52 feet)

Real-time GPS tracking: Track the wearer's location in real time

Geofencing: Set up virtual boundaries to receive alerts when the wearer enters or leaves a specific area.

Fall Detection: Detect falls and send alerts to emergency contacts

Including all accessories etc. sim etc.

**Additional Features**

**Design and Comfort:**

Lightweight and comfortable design for extended wear

Interchangeable straps for personalization

Durable construction for everyday use

**Security:**

Data encryption to protect user privacy

Password protection to prevent unauthorized access

Find My Device feature to locate a lost or stolen wristband

**Item 2: Ai Integratable IP Camera, CCTV Cameras and Web Streaming Cameras**

SR. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>AI Integratable IP Camera</b>				
1	High-performance 4K Ultra HD IP Camera with AI Integration	24		
2	High Resolution IP Cameras (CCTV Cameras)	26		
3	High Resolution IP Camera for live animal streaming to website	43		

## **MINIMUM SPECIFICATIONS/REQUIREMENT FOR HIGH-PERFORMANCE 4K ULTRA HD IP CAMERA WITH AI INTEGRATION**

### **Project Scope:** AI-Based Footfall Counting Mechanism

The AI-Based Footfall Counting Mechanism project aims to develop and implement a cutting-edge solution for accurately counting and analyzing visitor footfall at designated locations. The system employs state-of-the-art artificial intelligence and computer vision technologies to provide real-time data insights.

### **System Deployment:**

The system will be installed on a dedicated server or cloud infrastructure for optimal performance and scalability.

It will be compatible with Linux-based operating systems, such as Ubuntu and CentOS, to leverage AI frameworks effectively.

High-performance GPUs will be utilized to facilitate real-time image processing.

### **Tracking and Telematics:**

Geofencing capabilities for creating custom virtual boundaries and triggering alerts.

Speed monitoring to keep track of the system's operational velocity.

Route optimization for efficient system deployment.

### **AI-Based Footfall Counting:**

The AI model will be designed for real-time object detection with an accuracy rate of up to 95%.

Custom datasets will be used for training the object detection model to identify people accurately.

Age and gender classification using AI with an accuracy rate of up to 90%.

Image preprocessing to enhance detection accuracy.

### **Data Flow:**

The system will capture images from designated cameras at the monitored location.

Real-time object detection algorithms will identify people within the images.

Age and gender classification will categorize individuals.

Data will be stored in a dedicated database, including detection, classification, and timestamp information.

### **Database Schema:**

The database will include a Visitors Table for storing visitor data, including timestamps, age, gender, and other relevant information.

A Statistics Table will store daily, weekly, and monthly footfall statistics.

### **User Interface:**

The system will provide a web-based dashboard for users to visualize visitor footfall data.

Configurable settings for image sources, thresholds, and reporting intervals will be accessible to administrators.

### **Integration:**

APIs will be provided for third-party integration, such as reporting tools and Safari management systems.

### **Security:**

- Data encryption will secure sensitive data stored in the database.
- Robust user authentication and access controls will be in place.
- System audit trails will monitor user actions for accountability.
- Regular automated backups will ensure data security and recovery capabilities.

### **Performance Requirements:**



The system will perform real-time processing of images for accurate counting and classification.

It will be scalable to handle varying visitor volumes without compromising accuracy.

**Deployment and Maintenance:**

- The system will offer an easy installation process on the server or cloud environment.
- It will have the capability for remote updates and patches.
- Ongoing monitoring of system health and performance will be maintained.

**Testing and Quality Assurance:**

The project will undergo rigorous testing, including unit testing, integration testing, and performance testing.

The AI-Based Footfall Counting Mechanism project will provide Lahore Safari with an advanced solution for accurately counting and classifying visitors in real time, enabling data-driven decisions and insights into visitor behavior. The system will offer robust security, scalability, and compliance with data protection regulations, ultimately enhancing visitor experiences and Safari management capabilities.

- Clear and detailed footage.

Resolution: 4K Ultra HD (3840 x 2160) resolution for sharp visuals.

Low-Light Performance: Yes

Day/Night Functionality: Automatic switching between day and night modes.

Infrared (IR) Illumination: Built-in IR LEDs with a range of up to 30 meters.

**AI Integration:**

Computer Vision Software: Compatible with any AI-powered Deep Learning analytics software.

People Detection: Accurate detection of people within the camera's view.

People Counting: Real-time counting of people entering and exiting.

Face Recognition: Accurate identification of people within the camera's view.

**Analytics and Detection:**

Motion Detection: Advanced motion detection algorithms.

Zone-Based Detection: Configurable detection zones for specific areas.

Tamper Detection: Alerts for camera tampering attempts.

Vehicle Detection: Accurate detection of vehicles within the camera's view.

**Video Analysis:**

Object Tracking: Tracks individuals as they move within the camera's view.

Dwell Time Analysis: Measures how long people spend in specific areas.

Heatmaps: Generates heatmaps showing high-traffic areas.

**Connectivity:**

Network Connectivity: Ethernet or Wi-Fi connectivity options.

Power over Ethernet (PoE): Ability to power the camera via the network cable.

**Storage and Recording:**

Local Storage: Supports onboard storage via SD card or external drives.

Cloud Integration: Option to upload footage to cloud storage.

**Integration:**

API Integration: Connects with computer vision software via APIs.

Third-Party Integration: Integration with security management systems.

**Remote Access:**

Mobile App: Access camera feed remotely through a dedicated app.

Browser Access: Web-based access for remote monitoring.

**Durability and Environment:**

Weatherproof: Built to withstand outdoor environments (IP66 rated).

Vandal-Resistant: Resistant to tampering and vandalism.

**Mounting Options:**

Wall or Ceiling or Pole Mounting: Flexible installation options.

**Power Efficiency:**

Low Power Consumption: Efficient energy usage for continuous operation.

**Warranty and Support:**

1 year onsite warranty

**MINIMUM SPECIFICATIONS/REQUIREMENT FOR HIGH RESOLUTION IP CAMERA**

**Project Scope:** IP Camera/CCTV Surveillance Solution with Software NVR

The IP Camera/CCTV Surveillance Solution with Software Network Video Recorder (NVR) project aims to establish a comprehensive and technologically advanced video surveillance system for Lahore Safari. This system will enhance security, visitor monitoring, and operational efficiency throughout the facility.

**System Deployment:**

- The surveillance system will include IP cameras strategically deployed across Lahore Safari.
- The software-based NVR will be hosted on dedicated servers within the Safari's infrastructure.

**Camera Deployment:**

- Installation of a designated number of IP cameras at key locations, including entrance gates, parking lots, enclosures, and visitor pathways.
- Varied camera types, including fixed, PTZ (Pan-Tilt-Zoom), and specialized cameras for specific surveillance needs.
- The quantiles of PTZ and static cameras can be varied as per site location and client,s requirement.

**Video Recording and Storage:**

- Continuous video recording and storage of footage, ensuring real-time and historical data availability.

**Camera Management:**

- Camera configuration, monitoring, and control through a centralized management interface.
- Real-time camera health and status monitoring to ensure uninterrupted surveillance.

**Motion Detection and Alerts:**

- Implementation of motion detection algorithms to trigger alerts for unusual activities.
- Real-time alerts and notifications to security personnel for immediate response.

**Video Analytics:**

- Integration with AI-based video analytics for object detection, people counting, and anomaly detection.
- Customizable analytics rules for various surveillance scenarios.

**Remote Access and Viewing:**

- Access to live camera feeds and recorded footage remotely through web and mobile applications.
- Secure remote access with user authentication and encryption.

**Scalability:**

The system will be designed to accommodate future expansion, including the addition of more cameras and storage capacity.

**Data Backup and Redundancy:**

- Scheduled data backup to prevent data loss.
- Redundancy measures for critical data and failover capabilities to ensure continuous surveillance.

**Integration:**

- Integration with the existing ticketing and visitor management system for real-time tracking and security alerts.
- Integration with the AI-based software analytics and future interventions.

**Maintenance and Support:**

- Ongoing maintenance and technical support services to ensure the system's health and performance.
- Regular software updates and patches for improved functionality and security.

The IP Camera/CCTV Surveillance Solution with Software NVR will provide Lahore Safari with state-of-the-art surveillance capabilities, enhancing security and operational efficiency. The project will enable real-time monitoring, precise analytics, and seamless integration with existing systems, contributing to a safer and more enjoyable visitor experience at the Safari.

**ADDITIONAL SPECIFICATIONS:**

**Type:** Fixed-dome / bullet (could be both as per the site requirement)

**Resolution:** 4MP

**Field of View:** 108°

**Night Vision:** Up to 30 meters (98 feet)

**Power Supply:** DC 12V or PoE

**Connectivity:** Ethernet (RJ-45) (wireless optional)

**Operating Temperature:** suitable for outdoor use

ONVIF compatibility (for PTZ cams)

**For Surveillance:**

For surveillance within the safari zoo premises (hotspots) and on entry/exit gate, PTZ cameras are required.

**MINIMUM SPECIFICATIONS/REQUIREMENT FOR HIGH RESOLUTION IP CAMERA FOR LIVE ANIMAL STREAMING TO WEBSITE**

**Project Scope:** Safari Animal Webcam Streaming for Website and Mobile App

The Safari Animal Webcam Streaming project aims to provide real-time video streaming of wildlife in Lahore Safari to enhance visitor engagement, education, and conservation efforts. Live streaming of safari animals will be made available through a dedicated website and mobile application.

**Camera Deployment:**

Installation of high-quality webcams at strategic locations within Lahore Safari to capture animal habitats and activities.

Deployment of cameras with the capability to stream high-definition video in real-time.

**Live Streaming Infrastructure:**

Establishment of a robust live streaming infrastructure for video capture, encoding, and distribution.

Ensuring low-latency, high-quality video streaming for website and mobile app viewers. Should be pole/wall mounted.

**Web and Mobile Applications:**

Development of a user-friendly website and a dedicated mobile application for both Android and iOS platforms.

Implementation of intuitive user interfaces for easy access to live animal streams. Web & mobile app development is software component; it will be single application for all Zoo's.

**Multiple Camera Feeds:**

Providing access to multiple camera feeds to showcase diverse wildlife areas within the safari. Cameras covering various animal enclosures, feeding stations, and watering holes.

**Video Archives:**

Archiving of live streams for later viewing, enabling users to revisit exciting animal moments. User-friendly navigation to access archived videos by date, animal species, or camera location.

**Accessibility:**

Ensuring web and mobile applications are accessible to a broad audience, including those with disabilities.

Providing video captions and screen reader compatibility.

**Security and Privacy:**

Implementing security measures to protect animal habitats and minimize disturbances from the cameras.

Ensuring the privacy and safety of animals and visitors.

**Integration:**

Integration with the Safari's visitor ticketing system to offer combined packages for park entry and online streaming access.

Collaborating with the IP Camera/CCTV Surveillance System to enhance security and surveillance.

**Monitoring and Maintenance:**

Real-time monitoring of camera health and video quality to ensure uninterrupted streaming.

Routine maintenance and technical support for both the hardware and software components.

The Safari Animal Webcam Streaming project will offer a captivating and educational experience to both on-site and remote visitors. It will contribute to wildlife conservation efforts, promote biodiversity awareness, and increase the engagement of a global audience with the remarkable wildlife found within Lahore Safari.

**Additional Specifications:**

Product Name: IP Camera

Product Description: A hardware device designed for capturing and streaming live video footage over IP networks.

**Key Features:**

**High-Resolution Imaging:** Equipped with a high-resolution camera sensor for stunning video quality.

**Optical Zoom:** Offers optical zoom capabilities for close-up shots of distant animals.

**Wide-Angle Lens:** Features a wide-angle lens for capturing broader views of wildlife landscapes.

**Low-Light Performance:** Excellent low-light sensitivity for night-time and low-light conditions.

**Remote Control:** Allows remote camera control and adjustment for optimal framing.

**Weatherproof Design:** Built to withstand harsh outdoor conditions, including rain and dust.

**Infrared Illumination:** Infrared LEDs for night vision and capturing nocturnal wildlife activity.

**High Frame Rate:** Delivers high frame rates for smooth and detailed live streaming.

**Mobile App Support:** Companion mobile app for remote monitoring and control.

**Security Features:** User access control, encryption, and data protection.

**Integration:** Compatible with popular streaming platforms and mobile apps.

**Storage Options:** Supports local storage and cloud storage for video archives.

**Customizable Alerts:** Configurable motion detection and alerting features.

**Easy Installation:** User-friendly installation and setup process.

**Compatibility:** Compatible with various browsers and mobile devices.

180-Degree Rotation.

Supports high-speed internet connection for streaming.

**Power Supply:**

PoE (Power over Ethernet): Power can be supplied via Ethernet cable.

External Power Supply: Optional external power source.

**Mounting Options:** Wall Mount / Pole Mounted / Ceiling Mounted

**Environmental Condition:** Suitable for outdoor use

**Mobile App Compatibility:** Supports iOS and Android platforms.

**Streaming Compatibility:** Compatible with popular streaming services and platforms (web).

### Item 3: Car/Vehicle/Fleet GPS Tracker

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>EV Car/Vehicle/Fleet GPS Tracker</b>				
1	EV tracker with GPS, real-time tracking, remote monitoring, and anti-theft	12		
<p><b>Minimum specification/requirements for Car/Vehicle/Fleet GPS Tracker</b></p> <p><b>GPS and Location Tracking:</b>            GPS Technology: Advanced GPS receiver for accurate location tracking            Real-Time Tracking: Provides real-time location data            Position Accuracy: High position accuracy for precise tracking            Location Reporting: Periodic or event-triggered location reporting</p> <p><b>Connectivity:</b>            Network Compatibility: Supports 2G/3G/4G (LTE)            Wireless Communication: Enables remote communication for tracking data            SIM Card Slot: Accepts standard SIM cards for data connectivity</p> <p><b>Power Supply:</b>            Power Source: Designed for EV power systems or vehicle batteries            Voltage Range: Wide voltage input range for compatibility with EVs            Power Consumption: Low power consumption for minimal impact on EV battery</p>				

Battery Backup: Integrated backup battery for tracking during power loss  
 Battery Life: Provides extended backup power to ensure tracking continuity  
**Geo-Fencing:**  
 Geofence Creation: Allows for setting custom geofences and zones  
 Geo-Fence Alerts: Sends alerts upon entering or exiting geofenced areas  
**Remote Monitoring:**  
 Remote Access: Enables remote monitoring and control of the tracker  
 Data Retrieval: Allows retrieval of historical tracking data  
**Sensors and Data:**  
 Sensor Integration: Integration with vehicle sensors for additional data  
 OBD-II Compatibility: Optional compatibility with OBD-II diagnostic data  
**Anti-Theft and Immobilization:**  
 Anti-Theft Features: Includes anti-theft features and alerts  
 Vehicle Immobilization: Optional immobilization of the EV in case of theft  
**Driver Behavior Monitoring:**  
 Driver Scoring: Allows monitoring and scoring of driver behavior  
 Alerts for Violations: Provides alerts for speeding and other violations  
**Data Storage and Reporting:**  
 Data Storage: Internal storage for tracking data and event logs  
 Data Transfer: Data transfer to a central server or cloud platform  
**Integration:**  
 Software Integration: Compatibility with fleet management software and platforms  
 API Support: Allows integration with external systems via APIs  
**User Interface:**  
 User-Friendly Interface: Easy-to-navigate user interface for monitoring  
 Alert Notifications: Real-time alerts and notifications for actionable insights  
 Mobile Access: Access the system from mobile devices for remote monitoring

**Item 4: SMD and LED Screen**

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>SMD and LED Screen</b>				
1	Outdoor 12x12 feet p3.8 SMD Screen with mounting, controller, and Stadium Sound System	1		
2	12x10 feet p1.9 SMD Cinema Screen with high quality video processor/controller and 8.1 Cinema Sound System	1		
3	65 inch LED TV	12		

**MINIMUM SPECIFICATIONS/REQUIREMENTS FOR OUTDOOR P3.8 12X12 FEET SMD SCREEN WITH STADIUM SOUND SYSTEM**

**Display Specifications:**

Type: Outdoor SMD LED Display

Pixel Pitch: P3.8

Screen Size: 12x12 feet

LED Type: SMD (Surface-Mount Device) LED

**Sound System Specifications:**

Sound System Type: Stadium/outdoor Sound System

Sound Coverage: Up to 1000 square feet

**Construction and Build:**

Material: High-quality, weather-resistant steel construction

Protection Rating: IP65 (Ingress Protection rating for outdoor use)

Cabinet Design: Customizable cabinet design for branding or signage

Installation Method: Wall-mounted or freestanding or Pole

**Control and Operation:**

Control System: Video controller and processor included

Control Methods: Supports multiple control methods (Wi-Fi, LAN, remote control)

Operating Voltage: 110V AC or 220V AC

Power Consumption: Power optimized

**Additional Features:**

Content Management: Integration with content management systems for flexible display content

Brightness Control: Adjustable brightness for different lighting conditions

Remote Monitoring: Support for remote monitoring and diagnostics

**Mounting and Installation:**

Mounting Options: Wall-mounted or freestanding or Pole installation

Base Plate: Included for freestanding installation

Anchors: Anchors and mounting hardware provided

Installation Manual: Detailed installation manual included

**Warranty:**

Warranty Period: 1 year

**Minimum specifications/requirements for 12x10 Feet P1.9 4K Resolution Cinema SMD Screen with 4k Video Processor**

**Display Specifications:**

Type: Indoor SMD LED Cinema Screen

Pixel Pitch: P1.9

Screen Size: 12x10 feet

LED Type: SMD (Surface-Mount Device) LED

**Video Processor System:**

Processor Type: 4k Video Processor Unit/system

Video Inputs: As per standard (Preferred: 11 x HDMI, 4 x DVI, 1 x SDI)

Scaling and Calibration: Supports scaling and calibration for various video sources

Color Processing: High-quality color processing for accurate and vibrant displays

Video Formats: Supports various video formats and resolutions, including 4K UHD

**Construction and Build:**

Material: High-quality aluminum construction

Cabinet Design: Customizable cabinet design for cinema aesthetics

Installation Method: Wall-mounted or ceiling-mounted

Aspect Ratio: 16:9 standard aspect ratio

**Environmental and Operating Conditions:**

Operating Environment: Indoor use, suitable for controlled environments

**Control and Operation:**  
 Control System: Integrated control system for display management  
 Control Methods: Supports various control methods (Wi-Fi, LAN, remote control)  
 Operating Voltage: 110V AC or 220V AC  
 Power Consumption: Power optimized

**Additional Features:**  
 Content Management: Integration with content management systems for flexible display content  
 Brightness Control: Adjustable brightness for different lighting conditions  
 Pixel-Level Calibration: Supports pixel-level calibration for precise image quality

**Warranty:**  
 Warranty Period: 1 year

**Item 5: IP Phones**

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>IP Phones</b>				
1	Business HD IP Phone with POE	12		

**MINIMUM SPECIFICATION/ REQUIREMENTS FOR IP PHONES**

Product: IP Phone

Product Description: A hardware device designed for Voice over IP (VoIP) communication. It provides a user-friendly interface for making and receiving calls over IP networks.

**Key Features:**

- VoIP Communication: Enables voice communication over IP networks.
- High-Quality Audio: Delivers clear and high-quality audio during calls.
- HD Display: Equipped with a display for call information.
- Multi-Line Support: Supports multiple phone lines for different extensions.
- Power over Ethernet (PoE): Can be powered through Ethernet connections.
- Call Management: Features call hold, transfer, conferencing, and forwarding.
- Voicemail: Allows users to receive and manage voicemail messages.
- Contact Directory: Stores and displays contact information.
- Speakerphone: Includes a built-in speakerphone for hands-free calling.
- Headset Compatibility: Supports headsets for convenience.
- Network Ports: Equipped with Ethernet ports for network connectivity.
- Security: Implements security features to protect calls and data.
- Easy Configuration: User-friendly interface for setup and customization.
- Compatibility: Compatible with various IP PBX (Soft IP PBX) systems and SIP servers.
- Durable Design: Designed for long-term and heavy usage.



Support: 1 year warranty.

**Item 6: Datacenter (Virtualization), Networking and IT Equipment along with Accessories**

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>Datacenter (Virtualization), Networking and IT Equipment along with Accessories</b>				
1	Dedicated 10 Mbps Fiber-optic CIR Internet Service with Symmetrical Bandwidth	01		
2	Wireless Access Point with Wi-Fi 6 (802.11ax), and Dual-Band Support	04		
3	NGFW (Next Generation Firewall) with High performance and advanced threat protection	01		
4	Managed Gigabit Ethernet Switch with 24 Ports (PoE+) or Managed Gigabit Ethernet Switch with 12 Ports (distributed) (PoE+)	10		
5	2U Rack Mounted High Performance Application Server	01		
6	24U Server Rack with Lockable Glass Front Door (With accessories)	01		
7	2U Line Interactive UPS with Up to 1000 VA/Watts Power Capacity, Configurable Voltage, Hot-Swappable Batteries	01		
8	Radio wireless P2P access points	10		
9	4U switch Rack	05		
10	CAT6 UTP Ethernet Solid Copper Conductor Cable	L.S		
11	Network Accessories: Patch Panels, Cable Management, Patch Cables (Ethernet, Fiber Optic), Power Distribution Units (PDUs), Fiber Optic Enclosures, Cable Labels, Cooling Solutions, Network Racks and Shelves, Cable Ties, Grounding and Bonding Equipment, Label Printers.	L.S		

12	Type 1 Hypervisor with OS Support, Clustering, Security, Backup, and Cloud connectivity	01		
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## **Minimum System Requirement**

### **Project Scope:** Data Center and IT Infrastructure Setup with Hypervisor and Control Room

The project involves the establishment of a data center, IT infrastructure, hypervisor platform, and a control room for efficient management, monitoring, and maintenance of IT resources.

#### **Data Center Setup:**

- Design and construction of a secure and controlled environment for housing critical IT infrastructure.
- Installation of air conditioning system to maintain optimal temperature and humidity levels.
- Implementation of fire detection and suppression systems for enhanced safety.
- Power management solutions, including backup generators and uninterruptible power supplies (UPS), to ensure continuous operation.

#### **IT Infrastructure Implementation:**

- Deployment of hardware components, including servers, storage systems, and networking equipment.
- Configuration of redundant network connections for high availability and load balancing.
- Storage area network (SAN) setup for centralized and efficient data storage.
- Installation of backup and disaster recovery systems to safeguard data integrity.

#### **Virtualization Platform (Type-1 Hypervisor):**

- Installation and configuration of a virtualization hypervisor platform.
- Creation of virtual machines (VMs) for efficient resource utilization.
- Implementation of dynamic resource allocation to optimize performance.
- Integration of backup and snapshot solutions for VM protection.

#### **Control Room Setup:**

- Design and construction of a dedicated control room for IT infrastructure management.
- Installation of monitoring stations, control panels, and alerting systems.
- Provision of ergonomic workstations and comfortable seating for IT personnel.
- The control room will also serve as a centralized communications & control hub

#### **IT Management and Monitoring:**

- Deployment of comprehensive IT management software and tools for real-time monitoring and control.
- Implementation of centralized control for all data center resources.
- Integration with security systems and access controls for authorized personnel.

#### **Security and Access Control:**

- Implementation of multi-layer security measures, including biometric access controls and surveillance systems.
- Restricting physical access to authorized personnel only.
- Data encryption and security protocols to safeguard sensitive information.

#### **Disaster Recovery and Redundancy:**

- Establishing disaster recovery and redundancy solutions to ensure minimal downtime.
- Regular data backups and off-site storage for data protection.
- Failover mechanisms for critical systems in case of hardware failures.

#### **Connectivity and Networking:**

- High-speed, redundant internet connectivity for data center operations.
- Implementation of a secure and efficient network infrastructure.

- Integration with external networks and remote access solutions.

**Scalability and Growth:**

- Provision for scalability to accommodate future expansion and growth.
- Adherence to industry standards and best practices to support changing IT requirements.

**Documentation and Training:**

- Comprehensive documentation of the data center and IT infrastructure setup.
- Training and resources for IT personnel to ensure efficient operation and maintenance.

**Regulatory Compliance:**

Ensuring compliance with data protection and security regulations (e.g., GDPR, HIPAA, etc.), if applicable.

The project aims to provide a secure, efficient, and scalable IT environment that supports critical business operations. The data center and IT infrastructure setup, combined with advanced monitoring and control capabilities, will enhance the organization's ability to manage resources, optimize performance, and respond to unforeseen events effectively.

**MINIMUM SPECIFICATIONS FOR DEDICATED 10 MBPS FIBER-OPTIC CIR INTERNET SERVICE WITH SYMMETRICAL BANDWIDTH****General Specifications:**

Service Type: Dedicated Internet Connection with CIR

CIR Speed: 10 Mbps (Committed Information Rate)

Access Type: Fiber-optic or Radio depending upon the site access.

**Service Features:**

Symmetrical Bandwidth: Equal upload and download speeds for efficient data transfer

Low Latency: Minimized delays for real-time applications

Unlimited Data: No data usage caps or overage charges

VoIP Support: Integrated VoIP service for clear and reliable voice calls

Content Delivery Network (CDN) Support: Improved performance for online streaming and gaming

**Network Infrastructure:**

Technology: Utilizes advanced fiber-optic technology

Network Redundancy: Redundant paths for improved reliability

Network Security: State-of-the-art security measures to protect your data

**Equipment:**

CPE (Customer Premises Equipment): Provided and installed by ISP for optimal performance

Router: High-performance router for reliable connectivity

Firewall: Enhanced security options to protect your network

**Service Level Agreement (SLA):**

Uptime Guarantee: 99.9% uptime guarantee

Performance: Guaranteed 10 Mbps CIR, regardless of network congestion

Response Time: Average response time of 15 minutes for technical support and issue resolution

**Installation and Setup:**

Installation: Professional installation by ISP technicians

Equipment Setup: Configuration and optimization of CPE for optimal performance

**Support:**

24/7 Technical Support: Access to round-the-clock technical assistance  
Dedicated Account Manager: Assigned representative for personalized support

**Billing and Contracts:**

Billing Type: Yearly (for 1-year billing will be responsibility of selected vendor)  
Contract Length: Flexible contract terms with options for short and long durations

**MINIMUM WIRELESS ACCESS POINT WITH WI-FI 6 (802.11AX), AND DUAL-BAND SUPPORT****General Specifications:**

Type: Wireless Access Point  
Housing: Durable and aesthetically pleasing design

**Wireless Connectivity:**

Wireless Standards: IEEE 802.11a/b/g/n/ac/ax (Wi-Fi 6)  
Dual-Band Support: 2.4GHz and 5GHz frequency bands  
MIMO Technology: multiple streams for improved throughput.

**Network Features:**

Maximum Data Rate: Up to 1.3 Gbps  
Coverage Area: 120 square meters (approximate)  
WPA/WPA2/WPA3: Enhanced security protocols for secure connections

**Ports and Interfaces:**

Power over Ethernet (PoE): Supports PoE for simplified installation

**Management and Configuration:**

Management Interface: Web-based GUI for easy configuration  
Centralized Management: Compatible with network management systems  
Firmware Updates: Supports over-the-air firmware updates

**Advanced Features:**

Mesh Networking: Support for mesh networking for extended coverage  
Guest Network: Configurable guest network for secure separation  
Quality of Service (QoS): Prioritizes traffic for enhanced performance  
VLAN Support: Supports VLAN tagging for network segmentation

**Security:**

Encryption: WEP, WPA, WPA2, WPA3 encryption standards  
MAC Filtering: Granular control with MAC address filtering  
RADIUS Server Support: Authentication and security integration

**Environmental Conditions:**

Operating Temperature: -30 to 70 °C (as per the local weather conditions)

**MINIMUM SPECIFICATIONS NGFW (NEXT GENERATION FIREWALL) WITH HIGH PERFORMANCE AND ADVANCED THREAT PROTECTION****General Specifications:**

Form Factor: Desktop, compact design

**Firewall Performance:**

Firewall Throughput: Up to 5 Gbps  
NGFW Throughput: Up to 4 Gbps (including Application Control and IPS)  
Threat Protection Throughput: Up to 3 Gbps (including AntiVirus and Web Filtering)  
IPSec VPN Throughput: Up to 2 Gbps

**Security Features:**

Fabric for centralised management and advanced threat visibility.

Firewall: Stateful packet inspection, application control, and intrusion prevention.  
IPsec and SSL VPN: Secure remote access and site-to-site VPN connectivity.  
Web Filtering: URL filtering and content control.  
AntiVirus: Real-time threat detection and prevention.  
Application Control: Granular application-level access control.  
SD-WAN: Dynamic path selection and application steering.  
Sandboxing: Advanced threat detection through integration with FortiSandbox.  
Network Segmentation: Virtual LAN (VLAN) support for network segmentation.

**Networking:**

WAN Ports: Required  
LAN Ports: Required  
USB Ports: Required

**Management:**

Management Interfaces: Web-based GUI, CLI  
Centralized Management: centralized management and reporting.

**High Availability:**

Active-Passive Clustering: Supports high availability with active-passive clustering for redundancy.

**MINIMUM SPECIFICATIONS FOR Managed Gigabit Ethernet Switch with 24 Ports (PoE+) or Managed Gigabit Ethernet Switch with 12 Ports (distributed) (PoE+)**

**General Specifications:**

Type: Managed Gigabit Ethernet Switch  
Form Factor: Rack-mountable

**Ethernet Ports:**

Total Ports: 12 or 24 Gigabit Ethernet Ports as per the proposed solution  
PoE Support: 24 ports with PoE+ up to 30W per port  
SFP Ports: 2 SFP (Small Form-Factor Pluggable) ports for fiber uplinks

**Layer 3 Routing:**

Routing Features: Static routing and dynamic routing protocols (OSPF, BGP, etc.) support for inter-VLAN routing and network segmentation.

**Switching Performance:**

Switching Capacity: Up to 80 Gbps  
Forwarding Rate: Up to 16.8 million packets per second (Mpps)

**Quality of Service (QoS):**

QoS Support: Prioritization and traffic shaping for optimized network performance  
Voice and Video Support: QoS settings for voice and video applications

**VLAN Support:**

VLANs: Supports 4,096 VLANs for network segmentation  
VLAN Tagging: 802.1Q VLAN tagging for virtual LAN isolation

**Management:**

Management Interfaces: Web-based GUI, CLI (Command Line Interface)  
Centralized Management: centralized management, monitoring, and configuration

**Security:**

Access Control Lists (ACLs): Granular access control based on MAC addresses, IP addresses, and port numbers  
Port Security: Protection against unauthorized devices using MAC address locking

**Redundancy and Resilience:**

Link Aggregation: Support for link aggregation (LACP) for increased bandwidth and redundancy

STP/RSTP: Spanning Tree Protocol (STP) and Rapid Spanning Tree Protocol (RSTP) support for loop prevention

**Note:** 12 numbers of Ethernet switches of 12 ports each (of same specs) are also accepted in-case of distributed networking.

### **MINIMUM SPECIFICATIONS 2U RACK MOUNTED HIGH PERFORMANCE APPLICATION SERVER**

#### **General Specifications:**

Form Factor: 2U Rack Server

Processor Support: Dual Intel Xeon Scalable Processors

#### **Processor Options:**

Processor Types: Intel Xeon Gold

Core Count: Configurable with up to 24 cores based on processor selection

#### **Memory:**

Memory Type: DDR4 Registered DIMMs

Minimum Memory: 32 GB (configurable/expandable based on processor and memory configuration)

#### **Storage:**

Drive Bays: 8 2.5" or 3.5" hot-plug drive bays

Storage capacity: 8TB

Storage Options: Support for SAS, SATA, NVMe, or mixed drive types

RAID Support: Integrated RAID controllers or optional PERC RAID controllers

#### **Networking:**

Network Adapters: Dual integrated 1GbE or 10GbE network adapters

Optional Network Expansion: Additional PCIe network adapters for increased connectivity

#### **PCIe Expansion:**

PCIe Slots: 12 PCIe 3.0 or 4.0 expansion slots for additional cards

#### **Management:**

Management Interfaces: iDRAC9 with Lifecycle Controller for remote management

Management Software: OpenManage software suite for centralised server management

#### **Power Supplies:**

Power Supply Options: Single or dual redundant power supplies for availability

Power Efficiency: Support for high-efficiency power supplies

#### **Operating System Support:**

Operating Systems: Compatible with various Windows, Linux, and virtualization platforms

#### **Security:**

Security Features: TPM 2.0, Secure Boot, System Lockdown

#### **Certifications:**

Regulatory Compliance: Meets relevant safety and electromagnetic compatibility standards

### **MINIMUM SPECIFICATIONS 24U SERVER RACK WITH LOCKABLE GLASS FRONT DOOR (WITH ACCESSORIES)**

Rack Height: 24U (1U = 1.75 inches)

Material: Cold-rolled steel construction for durability

**Front and Rear Access:**

Front Door: Lockable tempered glass door for security and visibility

Rear Door: Lockable perforated metal door for airflow and cable access

**Mounting Rails:**

Adjustable Rails: Vertical mounting rails with adjustable depth for flexible equipment installation

Rail Type: Square hole rails compatible with various equipment types

**Ventilation:**

Cooling Fans: Multiple cooling fans for improved airflow and temperature management

Hot-Swap Fans: Fans that can be easily replaced without powering down the rack

**Cable Management:**

Cable Channels: Vertical and horizontal cable management channels for organized cable routing

Cable Tiedown Points: Multiple cable tiedown points for securing cables

**Accessories Included:**

Power Distribution Unit (PDU): Provides power distribution to rack-mounted equipment

Caster Wheels: Lockable caster wheels for easy mobility and positioning

Shelf(s): Sliding or fixed shelves for non-rackmount equipment or accessories

Blanking Panels: Used to fill empty rack spaces and improve airflow

Tool-less Mounting Hardware: Included for easy equipment installation

**Optional Accessories:**

Keyboard Tray: Pull-out keyboard and mouse tray for convenient management

Rack-Mountable UPS: Uninterruptible Power Supply for power backup

Rack-Mountable KVM Switch: Keyboard, Video, and Mouse switch for multiple server management

Additional Shelves: For increased storage or non-rackmount equipment

**Certifications:**

Standard for data center reliability

**MINIMUM SPECIFICATIONS FOR 2U LINE INTERACTIVE UPS WITH UP TO 1000 VA/WATTS POWER CAPACITY, CONFIGURABLE VOLTAGE, HOT-SWAPPABLE BATTERIES**

Rack Height: 2U (1U = 1.75 inches)

Topology: Line Interactive

Power Capacity: Up to 1000 VA/Watts

Output Voltage: Configurable based on input voltage and load requirements

**Battery Backup:**

Battery Type: Sealed Lead-Acid batteries

Battery Runtime: Configurable based on load and battery capacity

**Input/Output:**

Input Voltage: Configurable for various input voltage ranges (e.g., 120V, 230V)

Output Voltage: Configurable for various output voltage ranges

Output Waveform: Modified Sine Wave

**Management and Connectivity:**

Management Interface: LCD Display, LED Indicators, or Web-based GUI

Communication Ports: USB, Serial, Ethernet, SNMP for remote management



Software: Compatible with power management software for monitoring and control

**Protection Features:**

Voltage Regulation: Automatic voltage regulation (AVR) for voltage stabilization  
Surge Protection: Built-in surge protection for connected devices  
Load Segmentation: Ability to prioritize critical loads during power loss

**Audible and Visual Indicators:**

Audible Alarms: Audible alarms for various UPS conditions  
LED Indicators: LED status indicators for power, battery, and fault alerts

**Environmental Conditions:**

Operating Temperature: as per local weather conditions  
Humidity: 5 to 95% (non-condensing)

**MINIMUM SPECIFICATIONS FOR RADIO WIRELESS ACCESS POINTS (P2P)**

**General Specifications:**

Type: Radio Wireless Access Point (P2P)  
Housing: Durable and aesthetically pleasing design  
Pole mounted and accessories

**Wireless Connectivity:**

WiFi standards: 802.11ad/ay, 802.11ac (WiFi 5).

**Network Features:**

Maximum Data Rate: Up to 866 Mbps  
Coverage Area: 500 meters (approximate)  
WPA/WPA2/WPA3: Enhanced security protocols for secure connections

**Ports and Interfaces:**

Power over Ethernet (PoE)+: Supports PoE+ for simplified installation

**Management and Configuration:**

Management Interface: Web-based GUI for easy configuration  
Centralized Management: Compatible with network management systems  
Firmware Updates: Supports over-the-air firmware updates

**Advanced Features:**

Mesh Networking: Support for mesh networking for extended coverage  
Guest Network: Configurable guest network for secure separation  
Quality of Service (QoS): Prioritizes traffic for enhanced performance  
VLAN Support: Supports VLAN tagging for network segmentation

**Security:**

Encryption: WEP, WPA, WPA2, WPA3 encryption standards  
MAC Filtering: Granular control with MAC address filtering  
RADIUS Server Support: Authentication and security integration

**Environmental Conditions:**

Operating Temperature: Outdoor use (as per the local weather conditions)

**MINIMUM SPECIFICATIONS 4U SWITCH RACK**

Rack Height: 4U (1U = 1.75 inches)  
Material: Cold-rolled steel construction for durability with lockable glass front door (with accessories)

**Front and Rear Access:**

Front Door: Lockable tempered glass door for security and visibility  
Rear Door: Lockable perforated metal door for airflow and cable access

**Mounting Rails:**

Adjustable Rails: Vertical mounting rails with adjustable depth for flexible equipment installation

Rail Type: Square hole rails compatible with various equipment types

**Ventilation:**

Cooling Fans: Multiple cooling fans for improved airflow and temperature management

Hot-Swap Fans: Fans that can be easily replaced without powering down the rack

**Cable Management:**

Cable Channels: Vertical and horizontal cable management channels for organized cable routing

Cable Tiedown Points: Multiple cable tiedown points for securing cables

**Accessories Included:**

Power Distribution Unit (PDU): Provides power distribution to rack-mounted equipment

Caster Wheels: Lockable caster wheels for easy mobility and positioning

Shelf(s): Sliding or fixed shelves for non-rackmount equipment or accessories

Blanking Panels: Used to fill empty rack spaces and improve airflow

Tool-less Mounting Hardware: Included for easy equipment installation

**Optional Accessories:**

Keyboard Tray: Pull-out keyboard and mouse tray for convenient management

Rack-Mountable UPS: Uninterruptible Power Supply for power backup

Rack-Mountable KVM Switch: Keyboard, Video, and Mouse switch for multiple server management

Additional Shelves: For increased storage or non-rackmount equipment

**Certifications:**

Standard for data center reliability

**MINIMUM SPECIFICATIONS FOR CAT6 UTP ETHERNET SOLID COPPER CONDUCTOR CABLE****Cable Type:**

Cable Category: CAT6 (Category 6)

Cable Type: Unshielded Twisted Pair (UTP)

**Physical Characteristics:**

Cable Length: as per available standard roll in market

Cable Color: Varies (usually blue or gray, but other colors may be available)

Conductor Type: Solid copper conductors

Twisted Pairs: 4 twisted pairs (8 conductors in total)

Insulation: PVC (Polyvinyl Chloride) insulation for each conductor

**Performance Specifications:**

Data Rate: Supports up to 1 Gbps (Gigabit per second) data rates

Frequency: Designed to work up to 250 MHz

Transmission Distance: Reliable transmission up to 100 meters (328 feet)

**Applications:**

Networking: Ideal for structured cabling in office, data center, and home network installations

Data Transmission: Supports high-speed data, voice, and video transmission

**MINIMUM SPECIFICATIONS FOR NETWORK ACCESSORIES**

**Patch Panels:**

Port Density: Various port counts (e.g., 24, 48, 96 ports)  
Compatibility: Cat5e, Cat6, Cat6a, Cat7, fiber optic panels  
Termination: Keystone jacks or pre-terminated cables  
Rack Mountable: Fits standard 19-inch racks

**Cable Management:**

Cable Organizers: Vertical and horizontal cable managers  
Cable Rings: Rings for cable routing and separation  
Brush Strips: Cable pass-through with brush strips for airflow

**Patch Cables:**

Cable Types: Ethernet (Cat5e, Cat6, Cat6a, Cat7), Fiber optic (single-mode, multi-mode)  
Lengths: Various lengths (e.g., 1ft, 3ft, 6ft, etc.)  
Connectors: RJ45, LC, SC, ST, MTP/MPO

**Power Distribution Units (PDUs):**

Types: Basic, Metered, Monitored, Switched PDUs  
Outlets: Different outlet counts and types (C13, C19)  
Power Ratings: Various power ratings (e.g., 15A, 20A, etc.)  
Monitoring: Remote monitoring and management options

**Fiber Optic Enclosures:**

Rack Mountable: Fits standard 19-inch racks  
Fiber Capacity: Configurable for different fiber counts  
Adapter Types: LC, SC, MTP/MPO adapters

**Cable Labels and Markers:**

Labels: Self-laminating, heat shrink labels for cable identification  
Markers: Color-coded markers for cable grouping

**Cooling Solutions:**

Rack Cooling: Rack-mounted cooling units or fans  
In-Rack Cooling: In-row or in-rack cooling solutions  
Hot/Cold Aisle Containment: Solutions for optimizing airflow

**Network Racks and Shelves:**

Depth: Various depths for equipment placement  
Load Capacity: Support for heavy equipment

**Cable Ties and Velcro Straps:**

Cable Ties: Nylon or Velcro cable ties for cable management  
Velcro Straps: Reusable straps for bundling cables

**Grounding and Bonding:**

Grounding Bars: Copper grounding bars for proper grounding  
Bonding Clamps: Clamps for bonding equipment

**Label Printers:**

Types: Handheld or desktop label printers  
Label Types: Self-laminating, heat shrink, adhesive labels

**MINIMUM SPECIFICATIONS FOR TYPE 1 HYPERVISOR WITH OS SUPPORT, CLUSTERING, SECURITY, BACKUP, AND CLOUD CONNECTIVITY**

Hypervisor Types: Type 1 (Bare Metal)  
Supported Guest OS: Debian, Ubuntu, CentOS, Fedora, FreeBSD, OpenSUSE, Windows Server, etc.

Performance: Low overhead and can be used to run a variety of virtual machines with good performance.

**Server Hardware:**

- Processor: Support for virtualization extensions (e.g., Intel VT-x, AMD-V)
- Memory: at least 32 GB RAM to allocate to VMs
- Storage: at least 8TB storage capacity and performance (SAS recommended)
- Network: Gigabit or higher network interfaces for VM communication

**Resource Allocation and Management:**

- Resource Pools: Grouping VMs for resource allocation
- Dynamic Resource Allocation: Ability to allocate resources based on demand
- Over commitment: Managing more virtual resources than physical resources

**High Availability and Fault Tolerance:**

- Clustering: Clustering for VM failover and availability
- Live Migration: Ability to migrate running VMs between hosts
- Fault Tolerance: Redundancy to ensure uninterrupted operation

**Management and Monitoring:**

- Management Console: Web-based interface for VM management
- Centralized Management: Management of multiple hosts from a single console
- Monitoring: Monitoring VM performance, resource usage, and health

**Networking:**

- Virtual Switches: Creation of virtual switches for VM networking
- Network Segmentation: VLANs, subnets, and network isolation for VMs

**Security:**

- Isolation: Isolating VMs from each other
- Security Policies: Applying security policies to VMs
- Virtual Firewall: Virtual firewall for network security

**Backup and Recovery:**

- Snapshot: Taking and managing VM snapshots for backup and recovery
- Backup Solutions: Integration with backup solutions for VM protection

**Integration with Cloud and DevOps:**

- Cloud Integration: Integration with public or private cloud environments
- APIs: APIs for automation and integration with DevOps tools

**Performance Monitoring and Optimization:**

- Performance Analysis: Monitoring VM performance and identifying bottlenecks
- Resource Optimization: Tools to optimize resource utilization

**Note:** The Type-1 hypervisor will be provided along with the Cluster management solution.

**Item 7: E-Ticketing and Queue Management Technology Solution and Software Applications**

E-Ticketing and Queue Management Technology Solution and Software Applications				
SR. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty

1	Self-hosted/cloud-based Enterprise Ticketing Software, Linux/Windows OS-compatible, and API integration	01		
2	Unified communications (UC) PBX system with Voice calling, conference call, CRM integration, and mobility access	01		
3	AI based people counting system with realtime object detection, age/gender classification, reporting, and IP Camera Integration	01		
4	Comprehensive Fleet Management System with real-time tracking, security, analytics, and scalability for efficient management of up to 12 Electric Vehicles.	01		
5	IP Camera Network Video Recording (NVR) Software used for web/live streaming of animal live feed and connectivity with the website and mobile app.	01		
6	High-Performance Load Balancer: Linux-based, supports various algorithms, session persistence, SSL termination, security features, scalability, monitoring, and failover	01		
7	Advanced IT and Network Monitoring Solution upto 100 nodes with real-time availability and performance monitoring, alerting, cross-platform compatibility, customizable configurations, integrations, and security features	01		
8	Network Video Recorder (NVR) Solution, with multi-camera support, advanced video compression, AI integration, scalable storage, RAID support, smart search, remote access, analytics, security, scalability,	01		
9	Enterprise Backup Solution with versatile data support, multiple backup types, snapshot integration, application-awareness, encryption, on-premises and hosted deployment options, SAN-based storage, centralized management, disaster recovery, multi-platform compatibility, security features, scalability, and backup validation	01		
10	Advanced Data Analytics Solution: Data integration, cleansing, modeling, dashboarding, AI-powered people counting, and e-Ticketing system	01		

	integration, business unit monitoring, database integration, security, integration capabilities, AI-driven insights, scalability			
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## **Minimum System Requirement**

### **Project Scope:** Lahore Safari Parking and Visitor Ticketing System

The Lahore Safari Parking and Visitor Ticketing System will encompass the design, development, and implementation of an E-Ticketing solution for efficient management of the Lahore Safari visitor experience, including parking facilities and ticketing operations.

### **System Deployment:**

The system will be self-hosted to ensure data security and quick response times.

It will be compatible with various platforms, including Windows, Linux, macOS, and Android.

Server requirements will be met to host the application and database efficiently.

### **Database Management:**

The SQL-based database will be structured for managing data related to visitor ticketing, parking, and related operations.

### **User Interface:**

The user interface will include role-based access control for different user categories, such as administrators, cashiers, and managers.

It will feature a user-friendly and intuitive design that is responsive across various devices, including desktops, tablets, and mobile phones.

## **Functionality:**

### **Visitor Ticketing:**

Creation, processing, and management of visitor ticket sales transactions.

A product catalog to manage various types of tickets, pricing, and attributes.

Customer management to store visitor information and purchase history.

Integration with multiple payment gateways for a convenient payment process.

Reporting and analytics tools for generating sales reports and insights.

### **Parking Management:**

Inventory management for parking spots, monitoring availability, and issuing alerts for full parking lots.

Order fulfillment, which includes managing parking reservations and tracking entry and exit.

Promotions and Discounts:

Capability to apply discounts, promotions, and special offers.

### **Business Intelligence:**

Tools for gathering insights into visitor behavior and business performance, enabling data-driven decisions.

### **Integration:**

APIs will be provided for third-party integrations, such as accounting and CRM systems.

Hardware integration with receipt printers, barcode scanners, and more for efficient operations.

Payment gateways will be integrated to offer a variety of payment options for visitors.

### **Security:**

Sensitive data, including visitor information and transactions, will be encrypted.

Secure user authentication and login mechanisms will be implemented.

Audit trails will monitor and track user actions to ensure accountability.

Automated database backups will be scheduled for data protection.

### **Scalability:**

The system will be designed to handle high transaction volumes effectively.

Support for load balancing and scaling out to accommodate growing visitor numbers.

### **Localization:**

The system will support localization for various languages and currency conversions.

**Support and Maintenance:**

Comprehensive documentation will be provided for users and administrators.

Technical support options will be available, including support plans, forums, and helpdesk assistance.

**Performance Requirements:**

The system will aim to achieve minimal response times for user actions.

Efficient database performance will be maintained to enable quick data retrieval.

This project aims to provide Lahore Safari with an advanced E-Ticketing system that enhances visitor experiences, ensures data security, offers convenience through multiple payment options, and empowers the management with valuable insights for continuous improvements. The system will help streamline parking operations and provide visitors with a seamless ticketing process while adhering to relevant standards and regulations.

**MINIMUM SPECIFICATIONS FOR SELF-HOSTED/CLOUD-BASED ENTERPRISE TICKETING SOFTWARE, LINUX/WINDOWS OS-COMPATIBLE, AND API INTEGRATION**

Application Type: Enterprise Point of Sale (POS) Software

Deployment: Self-hosted, installed on the client's infrastructure or cloud-based

**Platform:**

Operating System: Compatible with Windows, Linux, macOS, and Android

Server Requirements: Suitable for hosting the application and database

Database Engine: SQL-based (e.g., MySQL, PostgreSQL, SQL Server, etc.)

Database Design: Efficiently structured for POS data (sales, products, customers)

**User Interface:**

User Access: Role-based access control (admin, cashier, manager, etc.)

Graphical User Interface: User-friendly and intuitive design

Responsive Design: Suitable for various screen sizes (desktop, tablet, mobile)

**Functionality:**

Sales Management: Creating, processing, and managing sales transactions

Product Catalog: Managing product inventory, pricing, and attributes

Customer Management: Storing and managing customer information

Payment Processing: Integration with various payment gateways and methods

Reporting and Analytics: Generating sales reports, analytics, and insights

Inventory Management: Monitoring and tracking stock levels, alerts, and restocking

Order Fulfillment: Managing orders, shipments, and delivery tracking

Promotions and Discounts: Applying discounts, promotions, and special offers

Multi-channel Sales: Managing sales across multiple channels (e.g., online, in-store, mobile)

Business Intelligence: Gaining insights into business performance

**Integration:**

APIs: Providing APIs for third-party integrations (e.g., accounting, CRM)

Hardware Integration: Integration with receipt printers, barcode scanners, etc.

Payment Gateways: Integration with popular payment gateways for payment processing

**Security:**

Data Encryption: Encryption of sensitive data (customer info, transactions)

Authentication: User authentication and secure login mechanisms

Audit Trails: Tracking user actions for auditing and accountability

Data Backup: Regular automated backups of the database

**Scalability:**

Performance: Designed to handle high transaction volumes

Load Balancing: Support for load balancing and scaling out

**Localization:**



Language Support: Localization for various languages and regions

Currency: Support for local currency and currency conversions

**Support and Maintenance:**

Documentation: Comprehensive user and administrator documentation

Technical Support: Offering support plans, forums, or helpdesk

**Performance Requirements:**

Response Time: Minimal response time for user actions

Database Performance: Efficient queries for quick data retrieval

**MINIMUM SPECIFICATIONS/REQUIREMENTS FOR UNIFIED COMMUNICATION (UC) PBX SYSTEM WITH VOICE CALLING, CONFERENCES, CALL, CRM INTEGRATION AND MOBILITY ACCESS.**

**Project Overview:**

- The IP-PBX (Internet Protocol - Private Branch Exchange) implementation project aims to establish an advanced and scalable telecommunication system for Lahore Safari. This system will enable efficient internal and external communication, ensuring seamless coordination and connectivity across the Safari facility.

**System Deployment:**

- The IP-PBX system will be deployed on-premises within Lahore Safari's infrastructure.
- The platform will be highly compatible with existing hardware and network infrastructure.

**Telephony Infrastructure:**

- The system will support a designated number of extensions and lines to accommodate internal and external communication requirements.
- Compatibility with both analog and IP-based telephony hardware for versatility.

**Call Routing and Management:**

- Efficient call routing features, including call forwarding, call transfer, and automated call distribution (ACD).
- Integration with interactive voice response (IVR) systems for streamlined caller experiences.

**Unified Communication:**

- Integration with email and messaging platforms for unified communication.
- Voicemail and voicemail-to-email functionality for efficient message management.

**Security:**

- Implementation of robust security measures, including secure voice communication (VoIP encryption).
- User authentication and access controls to protect the system from unauthorized access.

**Scalability:**

- The system will be designed to accommodate future growth and additional extensions, lines, and features as needed.

**Redundancy and Failover:**

- High availability and redundancy features to ensure uninterrupted communication.
- Failover capabilities to automatically switch to backup systems in case of disruptions.

**Integration:**

- Integration with the existing ticketing and visitor management system for seamless communication with Safari staff.
- Compatibility with the AI-based footfall counting mechanism for real-time reporting and alerts.

Maintenance and Support: - Ongoing maintenance and technical support services to ensure system health and performance for the period of 1 year.

Documentation: Comprehensive documentation to assist administrators in system management and troubleshooting.

The IP-PBX implementation for Lahore Safari will significantly enhance communication and coordination among staff, contributing to improved visitor experiences and overall operational efficiency. The system will provide secure and scalable telephony solutions and seamless integration with existing Safari management systems, reinforcing Lahore Safari's commitment to excellence.

**Key Features:**

- VoIP Communication: Enables voice communication over the Internet or internal networks.
- Call Routing: Routes calls to the appropriate extensions or departments.
- Voicemail: Allows users to receive and manage voicemail messages.
- Conference Calls: Supports multi-party conference calls.
- Auto-Attendant: Provides an automated phone menu for callers to direct their calls.
- Call Recording: Records and stores calls for quality assurance and compliance.
- Call Forwarding: Forwards calls to other extensions or external numbers.
- Interactive Voice Response (IVR): Enables customized automated responses.
- Integration: Integrates with IP phones and other communication systems.
- Reporting: Generates call logs and reports for analysis.
- Compatibility: Compatible with various IP phone models and SIP devices.
- Easy Configuration: User-friendly web-based configuration interface.
- Technical Support: Access to technical support and updates.

**Note:** The system should be VM supported, the complete working solution will be deployed on site.

**MINIMUM SPECIFICATIONS FOR AI BASED PEOPLE COUNTING SYSTEM WITH REALTIME OBJECT DETECTION, AGE/GENDER CLASSIFICATION, REPORTING, AND IP CAMERA INTEGRATION**

Application Type: People Counting and Classification System for a Zoo Entrance

Deployment: Installed on a dedicated server or cloud infrastructure

**Platform:**

Operating System: Linux-based (Ubuntu, CentOS) for compatibility with AI frameworks

Hardware: High-performance GPU for real-time image processing

**Technologies and Libraries:**

AI framework for object detection and classification

Computer vision library for image processing

Real-time object detection algorithm with state-of-the-art accuracy

Database for data storage

**System Architecture:**

Frontend: User-friendly web-based interface for system control and visualization

Backend: Application logic and AI models

Database Server: For storing visitor data, classifications, and statistics

**Object Detection and Classification:**

Algorithm for real-time object detection with accuracy of up to 95%

Training Data: Custom dataset for training the object detection model to detect people

Age and Gender Classification: AI model for age and gender classification with accuracy of up to 90%

Preprocessing: Image preprocessing to enhance detection accuracy

**Data Flow:**

Image Input: Capturing images from cameras at the zoo entrance

Object Detection: Using the object detection algorithm to detect people in the images

Age and Gender Classification: The AI model classifies people by age and gender

Data Storage: Storing detection, classification, and timestamp data in the database

Reporting: Generating reports and visualizations based on collected data

**Database Schema:**

Visitors Table: Storing visitor data (timestamp, age, gender, etc.)

Statistics Table: Storing daily, weekly, and monthly statistics

**User Interface:**

Dashboard: Visual representation of visitor count, age distribution, and gender breakdown

Settings: Configurable settings for image sources, thresholds, and reporting intervals

**Integration:**

Camera Integration: Integration with cameras at the entrance for real-time image capture

APIs: Providing APIs for third-party integration (e.g., reporting tools, zoo management systems)

**Security:**

Data Encryption: Encryption of sensitive data stored in the database

Authentication: User authentication and secure access controls

**Performance Requirements:**

Real-Time Processing: Real-time processing of images for accurate counting and classification

Scalability: Ability to handle varying visitor volumes

**Deployment and Maintenance:**

Installation: Easy installation process on the server or cloud environment

Updates: Capability for remote updates and patches

Maintenance: Monitoring system health and performance

**Licensing:**

Software License: Commercial or open-source license (depending on the solution)

**Regulatory Compliance:**

Privacy Regulations: Compliance with data protection regulations (e.g., GDPR)

**Testing and Quality Assurance:**

Unit Testing: Ensuring individual components work correctly

Integration Testing: Ensuring components work together seamlessly

Performance Testing: Testing system performance under different loads

**MINIMUM SPECIFICATIONS/REQUIREMENTS FOR COMPREHENSIVE FLEET MANAGEMENT SYSTEM WITH REAL-TIME TRACKING, SECURITY, ANALYTICS, AND SCALABILITY FOR EFFICIENT MANAGEMENT OF UP TO 12 ELECTRIC VEHICLES.**

**Project Overview:**

- The Fully Equipped Fleet Management System (FMS) project aims to develop a comprehensive software application for efficient management and monitoring of a fleet of vehicles. This system will cover various aspects of fleet management, including Electric Vehicle (EV) tracking, driver management, and fleet supervisor control.

**Electric Vehicle (EV) Management:**

- Implementation of EV-specific features to support the growing demand for electric and eco-friendly vehicle fleets.

- Monitoring and management of EV battery status, charge levels, range, and energy consumption.
- Integration with EV charging infrastructure to track charging status and location.
- Mileage tracking for EVs and assessing usage patterns and efficiency.

#### Driver Management:

- Assigning vehicles to drivers and monitoring driver performance, behavior, and working hours.
- Implementing a driver scoring system for safety and efficiency assessment.
- Real-time monitoring and alerts for harsh driving behavior, such as excessive acceleration, braking, and cornering.

#### Fleet Supervisor Control:

- Empowering fleet supervisors with the tools to oversee and manage the entire fleet of vehicles.
- Access to real-time data on vehicle locations, conditions, and driver activities.
- Communication with drivers and the ability to make informed decisions based on system insights.

#### Tracking and Telematics:

- GPS tracking for precise location tracking of all fleet vehicles.
- Geofencing capabilities to define custom geographic boundaries and receive alerts on vehicle entry/exit.
- Monitoring of vehicle speed and notification of speed violations.
- Route optimization to suggest and optimize routes for improved efficiency.
- Monitoring of fuel consumption for traditional vehicles.

#### Vehicle Health and Maintenance:

- Monitoring of vehicle health, diagnostics, and alerts for maintenance requirements.
- Tracking of vehicle mileage and preventive maintenance scheduling.
- Providing vehicle information to drivers and supervisors for proactive maintenance.

#### Security and Anti-Theft:

- Anti-theft features to prevent unauthorized access and enable vehicle immobilization in case of theft.
- Tamper alerts to notify of any unauthorized vehicle tampering or access.
- Support for stolen vehicle recovery through tracking capabilities.

#### Data Analytics and Reporting:

- Data visualization through real-time dashboards for a comprehensive overview of the fleet's status.
- Customized reports generation for vehicle and driver performance analysis.
- Access to historical data for trend analysis and decision-making.
- API integration for enabling connections with external systems and software.

#### User Interface:

- Development of user-friendly web and mobile applications for fleet managers, drivers, and supervisors.
- Intuitive user interfaces to ensure easy navigation and access to vital fleet information.

**Scalability and Customization:** Scalable architecture to accommodate the growth or changes in the fleet size. Customization options to tailor the system to specific business requirements and branding.

**Security and Compliance:** Implementation of data encryption for secure data transmission and storage. User access control and role-based permissions for data security. Ensuring compliance with data privacy regulations.

**Accessibility:** Ensuring the applications are accessible to users with disabilities, complying with accessibility standards.

The Fully Equipped Fleet Management System (FMS) will streamline fleet operations, improve efficiency, enhance driver safety, and contribute to cost savings. It will empower fleet supervisors, drivers, and managers with real-time insights and tools for informed decision-making, maintenance planning, and route optimization. The system will cater to both traditional and electric vehicle fleets, enabling organizations to transition toward more sustainable transportation options.

### **MINIMUM SPECIFICATIONS FOR IP CAMERA NETWORK VIDEO RECORDING (NVR) SOFTWARE USED FOR WEB/LIVE STREAMING OF ANIMAL LIVE FEED AND CONNECTIVITY WITH THE WEBSITE AND MOBILE APP.**

#### Project Overview:

- The Safari Animal Webcam Streaming project aims to provide real-time video streaming of wildlife in Lahore Safari to enhance visitor engagement, education, and conservation efforts. Live streaming of safari animals will be made available through a dedicated website and mobile application.

#### Camera Deployment:

- Installation of high-quality webcams at strategic locations within Lahore Safari to capture animal habitats and activities.
- Deployment of cameras with the capability to stream high-definition video in real-time.

#### Live Streaming Infrastructure:

- Establishment of a robust live streaming infrastructure for video capture, encoding, and distribution.
- Ensuring low-latency, high-quality video streaming for website and mobile app viewers.

#### Web and Mobile Applications:

- Development of a user-friendly website and a dedicated mobile application for both Android and iOS platforms.
- Implementation of intuitive user interfaces for easy access to live animal streams.
- The facility will be added in the already existing mobile app and web.

#### Multiple Camera Feeds:

- Providing access to multiple camera feeds to showcase diverse wildlife areas within the safari.
- Cameras covering various animal enclosures, feeding stations, and watering holes.

#### Video Archives:

- Archiving of live streams for later viewing, enabling users to revisit exciting animal moments.
- User-friendly navigation to access archived videos by date, animal species, or camera location.

**Accessibility:** Ensuring web and mobile applications are accessible to a broad audience, including those with disabilities. Providing video captions and screen reader compatibility.

**Security and Privacy:** Implementing security measures to protect animal habitats and minimize disturbances from the cameras. Ensuring the privacy and safety of animals and visitors.

**Monitoring and Maintenance:** Real-time monitoring of camera health and video quality to ensure uninterrupted streaming. Routine maintenance and technical support for both the hardware and software components.

The Safari Animal Webcam Streaming project will offer a captivating and educational experience to both on-site and remote visitors. It will contribute to wildlife conservation efforts, promote biodiversity awareness, and increase the engagement of a global audience with the remarkable wildlife found within Lahore Safari.

## **SPECIFICATIONS FOR HIGH-PERFORMANCE LOAD BALANCER: LINUX-BASED, SUPPORTS VARIOUS ALGORITHMS, SESSION PERSISTENCE, SSL TERMINATION, SECURITY FEATURES, SCALABILITY, MONITORING, AND FAILOVER**

### **Platform:**

Operating System: Linux-based (e.g., CentOS, Ubuntu)

Hardware: High-performance server with multiple CPUs and network interfaces

### **Load Balancing Algorithms:**

Round Robin: Distributes requests evenly across backend servers.

Least Connections: Directs traffic to the server with the fewest active connections.

Weighted Round Robin: Assigns weight to servers for proportional traffic distribution.

Weighted Least Connections: Assigns weight based on server load for balanced distribution.

### **Traffic Management:**

Session Persistence: Supports session persistence for maintaining user sessions.

Path-Based Routing: Routes traffic based on URL paths.

URL Rewriting: Allows URL manipulation for redirection or routing.

Health Checks: Periodic checks to monitor backend server health.

### **Security:**

SSL Termination: Handles SSL/TLS encryption and decryption.

Web Application Firewall (WAF): Protects against web application vulnerabilities.

Access Control: Implements access control lists and IP whitelisting.

### **Scalability:**

Auto-Scaling Integration: Works seamlessly with auto-scaling groups.

Dynamic Configuration: Supports dynamic addition/removal of backend servers.

### **Monitoring and Analytics:**

Metrics: Provides performance metrics and monitoring data.

Logging: Logs request/response data for analysis.

Integration: Integrates with monitoring and alerting tools.

### **Failover and High Availability:**

Active-Active Mode: Configurable as active-active for redundancy.

Virtual IPs: Supports virtual IP failover for seamless failover.

## **MINIMUM SPECIFICATIONS FOR ADVANCE IT AND NETWORK MONITORING SOLUTION UPTO 100 NODES WITH REAL-TIME AVAILABILITY AND PERFORMANCE MONITORING, ALERTING, CROSS-PLATFORM COMPATIBILITY, CUSTOMIZABLE CONFIGURATIONS, INTEGRATIONS, AND SECURITY FEATURES**

### **Monitoring Features:**

Node Count: Up to 100 nodes

Availability Monitoring: Real-time monitoring of application uptime

Performance Monitoring: Continuous tracking of resource utilization

Alerting: Instant notifications and alarms, email reporting

Dashboard: Intuitive web-based interface for visualizing metrics

### **Supported Platforms:**

Operating Systems: Linux, Windows, macOS

Cloud Platforms: AWS, Azure, GCP, and more

Applications: Wide range of data center applications and services

### **Monitoring Metrics:**

CPU and Memory Usage: Resource consumption insights

Network Traffic: Bandwidth utilization monitoring  
Disk Space: Storage usage tracking  
Service Availability: Monitoring application and service states  
Custom Metrics: Ability to track application-specific metrics

**Monitoring Modes:**

Agent-Based Monitoring: Installation of agent on monitored nodes  
Agentless Monitoring: Utilizing SNMP, APIs, and other protocols  
Hybrid Monitoring: Combination of agent-based and agentless approaches

**Configuration and Management:**

Automatic Discovery: Automated identification of networked devices  
Configuration Templates: Pre-configured settings for popular applications  
Customization: Tailor monitoring settings to specific application needs  
Scalability: Easily expand monitoring coverage as your infrastructure grows

**Alerting and Reporting:**

Alert Prioritization: Differentiated alert levels (critical, warning)  
Escalation Rules: Define escalation paths and notification sequences  
Reporting: Generate detailed performance and availability reports

**Integration:**

Third-Party Integrations: Connects with various ticketing and collaboration tools  
APIs: Integration with external systems for data sharing

**Security:**

Authentication and Authorization: User access controls  
Encryption: Secure communication between components

**Deployment Options:**

On-Premises: Install in on-premises environment

**Scalability:**

Node Additions: Easily increase monitoring capacity with licensing updates  
Cluster Mode: Support for high availability and load distribution

**Customization and Support:**

Custom Development: Extensibility through plugins and custom scripts  
Technical Support: Access to documentation, forums, and support services

**SPECIFICATIONS FOR SOFT NETWORK VIDEO RECORDER (SNVR) SOLUTION, WITH MULTI-CAMERA SUPPORT, ADVANCED VIDEO COMPRESSION, AI INTEGRATION, SCALABLE STORAGE, RAID SUPPORT, SMART SEARCH, REMOTE ACCESS, ANALYTICS, SECURITY, SCALABILITY,**

**Channels:**

Support for multiple camera streams simultaneously.  
Video Compression: H.265, H.264, or other advanced video compression standards.  
Recording Resolution: High-definition resolution support.  
Bit Rate: Configurable bit rate settings for optimal storage usage.

**Storage Capacity:**

Scalable storage options for short-term and long-term data.  
Hard Drive Bays: Multiple bays for hard drive installation.  
RAID Support: Support for RAID configurations for data redundancy.

**Data Management:**

Smart Search: Search recorded footage based on AI-detected events.  
Custom Alerts: Customizable alerts triggered by specific people counting events.  
Data Export: Export people counting data for external analysis.  
Integration and Connectivity:

**Camera Integration:**

Seamless integration with CCTV and streaming cameras.  
Network Connectivity: Ethernet connectivity for camera streams.  
Remote Access: Web-based and mobile app access for remote management.  
Analytics and Reporting:

**Video Playback:**

Playback of recorded footage.  
Timeline Navigation: Easy navigation through recorded events.

**Data Encryption:**

Secure data transmission and storage.  
User Authentication: Role-based user access controls.

**Scalability:**

Expandable: Add more cameras and storage as needed.  
Multi-NVR Management: Manage multiple NVRs from a centralized console.

**Compatibility:**

Camera Compatibility: Supports a wide range of IP cameras.  
Software Compatibility: Integration with various video management software.

**Remote Management:**

Mobile App: Mobile app for remote monitoring and alerts.

**Warranty:**

1-year warranty

**SPECIFICATIONS FOR ENTERPRISE BACKUP SOLUTION WITH VERSATILE DATA SUPPORT, MULTIPLE BACKUP TYPES, SNAPSHOT INTEGRATION, APPLICATION-AWARENESS, ENCRYPTION, ON-PREMISES AND HOSTED DEPLOYMENT OPTIONS, SAN-BASED STORAGE, CENTRALIZED MANAGEMENT, DISASTER RECOVERY, MULTI-PLATFORM COMPATIBILITY, SECURITY FEATURES, SCALABILITY, AND BACKUP VALIDATION**

Data Types: Supports structured and unstructured data, databases, virtual machines, and applications.

Backup Types: Full, incremental, and differential backups.

Snapshot Integration: Integration with storage snapshots for faster backups.

Application-Aware Backup: Support for consistent application backups.

Backup Compression: Data compression for efficient storage utilization.

Deduplication: Elimination of redundant data for optimized storage.

Encryption: Data encryption in transit and at rest for security.

**Deployment Options:**

On-Premises Backup: Installed within the organization's infrastructure.

Hosted Backup on SAN: Utilizes a remote SAN infrastructure for backup storage.

**Hosted Backup on SAN Features:**

Storage Area Network (SAN): Utilizes high-speed SAN infrastructure for backup storage.

Redundancy: SAN redundancy for data protection and high availability.

Scalability: Easily expand storage capacity as backup needs grow.

Performance: High-speed SAN architecture for quick backup and restore operations.

**Backup Management:**

Centralized Management Console: Web-based interface for configuring and managing backups.

Policy-Based Backup: Flexible backup policies based on data retention and priority.

Automated Scheduling: Automated backup scheduling for convenience.

Retention Policies: Configurable retention settings for data lifecycle management.



Monitoring and Reporting: Real-time monitoring and comprehensive reporting.

**Disaster Recovery:**

Off-Site Copy: Option to create off-site copies for disaster recovery.

Disaster Recovery Testing: Ability to test recovery procedures without affecting production.

**Integration and Compatibility:**

Multi-Platform Support: Compatible with diverse operating systems and platforms.

Application Integration: Integration with various applications and databases.

Cloud Integration: Backup to and from cloud storage services.

**Security:**

Access Controls: Role-based access and authorization for secure management.

Data Encryption: Encryption of backup data and communication channels.

**Performance and Scalability:**

Scalable Architecture: Scales to accommodate growing backup data.

Parallel Backup: Ability to perform multiple backups simultaneously.

Network Optimization: Efficient data transfer mechanisms for reduced impact on network.

**Compliance and Regulations:**

GDPR and Data Protection: Compliant with data protection regulations.

**Customization and Extensibility:**

Custom Scripts and Hooks: Extensibility through custom scripts and hooks.

APIs: Integration with third-party tools and automation frameworks.

**Backup Testing and Validation:**

Backup Verification: Regular backup validation to ensure recoverability.

**Documentation and Training:**

User Documentation: Comprehensive documentation for setup and usage.

Training: Resources for training administrators on best practices.

**MINIMUM SPECIFICATIONS FOR ADVANCED DATA ANALYTICS SOLUTION: DATA INTEGRATION, CLEANSING, MODELING, DASHBOARDING, AI-POWERED PEOPLE COUNTING, AND E-TICKETING SYSTEM INTEGRATION, BUSINESS UNIT MONITORING, DATABASE INTEGRATION, SECURITY, INTEGRATION CAPABILITIES, AI-DRIVEN INSIGHTS, SCALABILITY**

**Data Integration:** Can connect to a wide variety of data sources, including on-premises data warehouses, cloud data warehouses, and online SaaS applications.

**Data Cleansing:** Has built-in tools for cleansing and transforming raw data, making it ready for analysis.

**Data Modeling:** Can create data models that make it easy to analyze complex data sets.

**Dashboard and Reporting:** Provides interactive dashboards and reports that make it easy to visualize data and share insights with others.

**AI Integration for People Counting:** Can integrate with AI models to provide accurate people counting in the zoo. This can be used to track visitor traffic patterns and trends.

**AI Features for BU Monitoring:** Can use AI to detect anomalies, forecast future trends, identify root causes of performance issues, and optimize resource allocation.

**Database Integration:** Can integrate with a variety of databases, including SQL Server, Oracle, and MySQL. This allows you to store your data in a centralized location for easy access and analysis.

**Data Analytics:** Provides a variety of tools for analyzing data, including ad hoc queries, data exploration, and segmentation.

**Security and Privacy:** Uses industry-standard security measures to protect your data, including data encryption and role-based access control.

**Integration:** Can be integrated with a variety of external systems and applications, such as Azure Active Directory, Salesforce, and SAP.

**AI-Driven Insights:** Uses AI to provide insights into your data, such as predictive analytics and smart alerts.

**Scalability:** Scalable to meet the needs of your business, whether you have a small team or a large enterprise.

### Item 8: Professional Services

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>Professional Services</b>				
1	Professional Implementation and Integration Services: Deployment, Configuration, Integration, Testing, Optimization, Documentation, Training, Support, Project Management, Quality Assurance, Security, Documentation and Training, Post-Implementation Support, Completion and Handover.	L.S		
<p><b>Minimum System Requirement</b></p> <p><b>Project Scope:</b> The project entails the professional implementation and integration services, covering deployment, configuration, integration, testing, optimization, documentation, training, support, project management, quality assurance, security, post-implementation support, and completion and handover. The focus is on seamlessly deploying and configuring the services, ensuring integration with existing systems, conducting rigorous testing, and fine-tuning for optimal performance. Comprehensive documentation and user training programs will be developed to facilitate smooth operations. Ongoing support, project management, and adherence to quality and security standards are integral components. Post-implementation, the project will address any issues that arise and ensure a successful handover of documentation and access to the client for independent management. This concise scope outlines a systematic and efficient approach to delivering professional services throughout the project lifecycle.</p>				
<p><b>Note:</b> This is a complete turnkey solution the selected vendor will be responsible 1-year support/warranty for the provided hardware/solution on site.</p>				

## Section-IV: Bid Data Sheet

The following specific data for the goods to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB) Section II. Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

<b>A. Introduction</b>		
<b>BDS Clause Number</b>	<b>ITB Number</b>	<b>Amendments of, and Supplements to, Clauses in the Instruction to Bidders</b>
1.	2.1.1	<p>Name of Procuring Agency: <b>PROJECT DIRECTOR, IMPLEMENTATION OF MASTER PLAN OF SAFARI ZOO LAHORE</b></p> <p>The subject of procurement is: <b>PURCHASE OF HARDWARE AND SOFTWARE FOR THE PROJECTS OF E-TICKETING, AI INTEGRATION, FLEET MANAGEMENT SYSTEM, SAFARI ANIMAL WEBCAM, IT INFRASTRUCTURE AND DATACENTER FOR LAHORE SAFARI</b></p> <p>Period for delivery of goods: <b>08 WEEKS</b></p> <p>Commencement date for delivery of Goods: <b>WITHIN 08 WEEKS</b></p>
2.	2.1.2	<p>Financial year for the operations of the Procuring Agency: <b>2023-24</b></p> <p>Name of Project/ Grant (Development or Non-Development): Implementation of master plan of safari zoo, Lahore (Development) <b>Finance Department, Government of the Punjab</b></p> <p>Name of financing institution: <b>Finance Department, Government of the Punjab</b></p> <p>Name and identification number of the Contract: <b>N/A</b></p>
3.	2.1.3 (v)	<p>Maximum number of members in the Bid, consortium or association shall be: 02 form 8.2 should be followed.</p>
<b>B. Bidding Documents</b>		
4.	2.2.2	<p>The address for clarification of Bidding Documents is:</p> <p><b><u>PRIMARYCONTACT</u></b> <u>Project Director</u> <u>Implementation of Master Plan of Safari Zoo Lahore</u> <u>Address: Safari Zoo Lahore, Raiwind Road Lahore.</u> <u>Email: <a href="mailto:impszl572@gmail.com">impszl572@gmail.com</a></u></p>

		<p><b><u>SECONDARY CONTACT</u></b>  <u>Project Director</u>  <u>Implementation of Master Plan of Safari Zoo Lahore</u>  <u>Address: 02-sanda road Lahore</u>  <u>Email: <a href="mailto:impszl572@gmail.com">impszl572@gmail.com</a></u></p>
5.	2.2.2	<p>Pre-Bid Meeting:  <b>DATE &amp; TIME: 20 DECEMBER, 2023@ 1200 PST</b>  <b>VENUE: SAFARI ZOO LAHORE, RAIWIND ROAD LAHORE</b></p>
6.	2.3.9	The number of bidding documents to be completed and returned is in one original and one copy.
<b>C. Bid Price, Currency, Language and Country of Origin</b>		
7.	2.3.1	<i>Language of the Bid: <u>English</u></i>
8.	2.3.4	The price quoted shall be fixed in PAK RUPEES inclusive of all applicable taxes and duties, on DDP destination basis.
9.	2.1.4 (ii)	<p>Country of origin:  <i>All eligible countries to do business in Pakistan by the law of Government of Pakistan.</i></p>
<b>D. Preparation and Submission of Bids</b>		
10.	2.2.2	<p>Bid shall be submitted to:  <u>The Project Director</u>  <u>Implementation of Master Plan of Safari Zoo Lahore</u>  <u>Address: Safari Zoo Lahore, Raiwind Road Lahore.</u></p>
11.	2.4.2	<p>The deadline for Bid submission is:  <b>22 December, 2023 @ 1300 PST</b></p>
12.	2.5.1	<p>Time, date/ Month/ Year, and place for Bid opening.  <b>22 December, 2023 @ 1400 PST</b></p>
13.	2.6.2	Amount of Performance Guarantee is: <b><u>10% OF THE CONTRACT AMOUNT</u></b>
14.	2.3.8	Bid validity period after opening of the Bid is: <b><u>NINETY (90) DAYS.</u></b>
<b>E. Opening and Evaluation of Bids</b>		
16.	2.5.1	<p>The Bid opening shall take place at:  <b>22 December, 2023 @ 1400 PST</b>  <b>Office of the Project Director, Implementation of master plan of safari zoo Lahore.</b>  Safari Zoo Lahore, Raiwind road Lahore</p>

17.	2.5.7	The currency that shall be used for Bid evaluation is: <b>PAK RUPEES</b>
<b>F. Bid Evaluation Criteria</b>		
18.	2.5.5	Criteria to Bid evaluation is presented below:

### EVALUATION CRITERIA (MANDATORY & TECHNICAL):

Category	Description	Points			
<b>Legal (Mandatory)</b>	Valid Income Tax Registration *Registered for at least last <b>three (03) years;</b>	Required			
	Valid General Sales Tax Registration (Status = Active with FBR/Relevant Authorities)	Required			
	Affidavit (as per <b>form 8.6</b> ) on non-judicial Stamp Paper of Rs. 100/- (i) The firm is not blacklisted from any Department. (ii) The documents/photocopies provided with Bid are authentic. In case of any fake/bogus document look at any stage. They shall be black listed as per Rules / Laws. (iii) Affidavit for correctness of information. (iv) Contractor/firm is not blacklisted or subject to any pending litigation with any Government or Public Department. (v) Compliance to the Section – III “Technical Specifications” and Section – VII “Schedule of Requirements”	Required			
<b>Technical Evaluation Criteria</b>	40 marks for having three or more IT based contracts. 30 marks for having two IT based contracts. 20 marks for having 1 IT based contract. No marks for having no IT based contract <b>(Attach proof / bill of landing/ online inquiry etc.)</b>	40 Marks			
	<table border="1"> <thead> <tr> <th>Lot No.</th> <th>Amount in PKR</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>60 million and above</td> </tr> </tbody> </table> <p>Management Staff. (01) Professional Qualified Manager having 16-year education with 05-year experience (10 Marks), Other Staff (10 Marks), Company Profile (10 marks)</p>	Lot No.	Amount in PKR	01	60 million and above
Lot No.	Amount in PKR				
01	60 million and above				

	<p>30 marks for annual cash flow of last 05 years of the firm is equal to the estimated cost. If low following formula will be used to calculate the numbers: <math>(A/X) \times 30</math> A= Cashflow X= Estimated cost</p> <p><b>(Attach bank statement)</b></p>	30 Marks
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## Section-V: General Conditions of Contract

### 1. Definitions

1.1 In this Contract, the following terms shall be interpreted as indicated:

- (a) "The Contract" means the agreement entered into between the Procuring Agency and the Supplier, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- (b) "The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations.
- (c) "The Goods" means all of the equipment, machinery, and/or other materials which the Supplier is required to supply to the Procuring Agency under the Contract.
- (d) "The Services" means those services ancillary and related to the supply of the Goods, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training, maintenance & repair and other such obligations of the Supplier covered under the Contract.
- (e) "GCC" means the General Conditions of Contract contained in this section.
- (f) "SCC" means the Special Conditions of Contract.
- (g) "The Procuring Agency" means the organization purchasing the Goods & Services, as named in SCC.
- (h) "The Procuring Agency's country" is the country named in SCC.
- (i) "The Supplier" means the Bidder or firm supplying the Goods and Services under this Contract.
- (j) "The Project Site," where applicable, means the place or places named in SCC.

(k) "Day" means calendar day.



## 2. Application

2.1. These General Conditions shall apply to the extent that they are not superseded by provisions of other parts of the Contract.

## 3. Country of Origin

3.1. All Goods and Services supplied under the Contract shall have their origin in the countries and territories eligible under the rules, as further elaborated in the SCC.

*[where applicable]*

3.2. For purposes of this Clause, "origin" means the place where the Goods were mined, grown, or produced, or from where the Services are supplied. Goods are produced when, through manufacturing, processing, or substantial and major assembly of components, a commercially recognized new product is obtained that is substantially different in basic characteristics or in purpose or utility from its components.

3.3. The origin of Goods and Services is distinct from the nationality of the Supplier. In any case, the requirements of rules 10 & 26, PPR-14, shall be followed.

## 4. Standards

4.1. The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standards appropriate to the Goods' country of origin. Such standards shall be the latest issued by the concerned institution.

## 5. Use of Contract Documents and Information; Inspection and Audit by the procuring agency.

5.1. The Supplier shall not, without the Procuring Agency's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Procuring Agency in connection therewith, to any person other than a person employed by the Supplier in the performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

5.2. The Supplier shall not, without the Procuring Agency's prior written consent, make use of any document or information enumerated in GCC Clause 5.1 except for purposes of executing the Contract.

5.3. Any document, other than the Contract itself, enumerated in GCC Clause 5.1 shall remain the property of the Procuring Agency and shall be returned (all copies) to the Procuring Agency on completion of the Supplier's performance under the Contract if so required by the Procuring Agency.

5.4. The Supplier shall permit the Procuring Agency to inspect the Supplier's accounts and records relating to the performance of the

Supplier and to have them audited by auditors appointed by the donors, if so required by the donors.

## **6. Patent Rights**

6.1. The Supplier shall indemnify the Procuring Agency against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof in the Procuring Agency's country.

## **7. Performance Guarantee**

7.1. **Within twenty-eight (28) days of issuance** of the notification of Contract award, the successful Bidder shall furnish to the Procuring Agency the Performance Guarantee in the amount specified in SCC/Bid Data Sheet & clause 2.6.2 of ITB.

7.2. The proceeds of the Performance Guarantee shall be payable to the Procuring Agency as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

7.3. As per Rule-56 of PPR-14, the performance guarantee shall be denominated in the currency of the Contract acceptable to the Procuring Agency and shall be in one of the following forms:

- (a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the Procuring Agency's country, in the form provided in the Bidding documents or another form acceptable to the Procuring Agency; or
- (b) a Bank Guarantee, Bank call-deposit (CDR), Demand Draft (DD), Pay Order (PO) or Banker's cheque cashier's or certified cheque or CDR.

7.4. The performance guarantee will be discharged by the Procuring Agency and returned to the Supplier not later than thirty (30) days following the date of completion of the Supplier's performance obligations under the Contract, including any warranty obligations, unless specified otherwise in SCC.

## **8. Inspections and Tests**

8.1. The Procuring Agency or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Procuring Agency. SCC and the Technical Specifications shall specify what inspections and tests the Procuring Agency requires and where they are to be conducted. The Procuring Agency shall notify the Supplier in writing, in a timely manner, of the identity of any representatives nominated for these purposes.

8.2. The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at point of delivery, and/or at the Goods' final destination. If conducted on the premises of the Supplier or its subcontractor(s) (if so, allowed by the Procuring Agency), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Procuring Agency.

8.3. Should any inspected or tested Goods fail to conform to the Specifications, the Procuring Agency may reject the Goods, and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Procuring Agency.

8.4. The Procuring Agency's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival in the Procuring Agency's country shall in no way be limited or waived by reason of the Goods having previously been inspected, tested, and passed by the Procuring Agency or its representative prior to the Goods' shipment from the country of origin.

8.5. Nothing in GCC Clause 8 shall in any way release the Supplier from any warranty or other obligations under this Contract.

## **9. Packing**

9.1. The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2. The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the Contract, including additional requirements, if any, specified in SCC, and in any subsequent instructions ordered by the Procuring Agency.

## **10. Delivery and Documents**

*[in case of  
Framework Modality  
the Procuring*

10.1. Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in the Schedule of Requirements. The details of shipping and/or other documents to be furnished by the Supplier are specified in SCC.

*Agency may amend these condition as per its requirements]*

10.2. Upon delivery, the Procuring Agency shall give receiving certificate to the supplier with the statement that, “completion certificate along with satisfactory report shall be issued after due inspection as per clause-8 of GCC, which will enable the supplier to put up the bill”.

*[Further conditions may be incorporated by the Procuring Agency keeping in view the nature of contract, DDP, CIF, C&F, FOR, FOP for example; for a DDP contract the clause may be as follows:].*

10.3. For purposes of the Contract, DDP trade term used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of *Incoterms*

10.4. Documents to be submitted by the Supplier are specified in SCC.

## **11. Insurance**

*[If required and decided by the Procuring Agency]*

11.1. The Goods supplied under the Contract shall be delivered **on DDP Destination Basis** under which risk is transferred to the buyer after having been delivered, hence **Insurance** is sellers’ responsibility.

## **12. Transportation**

12.1. The Supplier is required under the Contract to transport the Goods to a specified place of destination within the Procuring Agency’s country, including **freight**, insurance, and storage, as shall be specified in the Contract, and related costs shall be included in the Contract Price.

## **13. Incidental Services**

*[If required and decided by the Procuring Agency]*

13.1. The Supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC:

- (a) satisfactory performance for specified time/ quantity on-site and/or supervision of on-site assembly and/or start-up of the supplied Goods;
- (b) furnishing of tools required for assembly and/or maintenance of the supplied Goods;
- (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Goods;
- (d) performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and

- (e) training of the Procuring Agency's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.

13.2. Prices charged by the Supplier for incidental services shall be included in the Contract Price for the Goods and shall not exceed:

- (i) the prevailing rates charged for other parties by the Supplier for similar services; and
- (ii) original price of goods.

#### **14. Spare Parts**

*[If required and decided by the Procuring Agency]*

14.1. As specified in SCC, the Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:

- (a) such spare parts as the Procuring Agency may choose to purchase from the Supplier, provided that this choice shall not relieve the Supplier of any warranty obligations under the Contract; and
- (b) in the event of termination of production of the spare parts:
  - (i) advance notification to the Procuring Agency of the pending termination, in sufficient time to permit the Procuring Agency to procure needed requirements; and
  - (ii) following such termination, furnishing at no cost to the Procuring Agency, the blueprints, drawings, and specifications of the spare parts, if requested.

#### **15. Warranty**

15.1. The Supplier warrants that the Goods supplied under the Contract are new, unused, of the most recent or current models selected by the Procuring Agency, and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the Procuring Agency's specifications) or from any act or omission of the Supplier, that may develop under normal use of the supplied Goods in the conditions prevailing in the country of final destination.

15.2. This warranty shall remain valid for \_\_\_\_\_ ***[to be decided by the Procuring Agency] year/months*** after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the Contract, or for \_\_\_\_\_ ***[to be decided by the Procuring Agency] year/months*** after the date of

shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in SCC.

15.3. The Procuring Agency shall promptly notify the Supplier in writing of any claims arising under this warranty.

15.4. Upon receipt of such notice, the Supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective Goods or parts thereof, without costs to the Procuring Agency.

15.5. If the Supplier, having been notified, fails to rectify the defect(s) within the period specified in SCC, within a reasonable period, the Procuring Agency may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Procuring Agency may have against the Supplier under the Contract/relevant provision of PPR-14 including Blacklisting.

## **16. Payment**

16.1. The method and conditions of payment to be made to the Supplier under this Contract shall be specified in SCC.

16.2. The Supplier's request(s) for payment shall be made to the Procuring Agency in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and Services performed, and by documents submitted pursuant to GCC Clause 10, and upon fulfillment of other obligations stipulated in the Contract.

16.3. As per rule-62 of PPR-14, payments shall be made promptly by the Procuring Agency, but in no case later than thirty (30) days after submission of an invoice or claim by the Supplier, provided the work is satisfactory.

16.4. The currency of payment is **PAK RUPEES**.

## **17. Prices**

17.1. Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in its Bid, with the exception of any price adjustments authorized in SCC.

## **18. Change Orders**

18.1. The Procuring Agency may at any time, by a written order given to the Supplier pursuant to GCC Clause 31, make changes within the general scope of the Contract, only if required for the successful completion of the job, in any one or more of the following:

- (a) drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Procuring Agency;
- (b) the method of shipment or packing;
- (c) the place of delivery; and/or
- (d) the Services to be provided by the Supplier.

18.2. If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within thirty (30) days from the date of the Supplier's receipt of the Procuring Agency's change order. But, in no case, the overall impact of the change should exceed **15% of the contract cost** and no provisions of PPR-14 should be violated.

**19. Contract Amendments**

19.1. Subject to GCC Clause 18, no variation in or modification of the

terms of the Contract shall be made except by the mutual consent through written amendment signed by the parties. No variation in finalized brands/ makes/models shall be allowed except in special conditions where the manufacturer has stopped producing or suspended that model or the latest model of similar series or version has been launched by the manufacturer or non-availability due to international mergers of the manufacturers or similar unavoidable constraints.

**20. Assignment**

20.1. The Supplier shall not assign the whole of contract to anybody else. However, some parts of contract or its assigned to sub-contractors with the prior written procuring agency.

**21. Sub-contracts**

21.1. The Supplier shall notify the Procuring Agency in the Bid of all subcontracts to be assigned under this Contract. Such notification, in the original Bid or later, shall not relieve the Supplier from any liability or obligation under the Contract.

21.2. Subcontracts must comply with the provisions of GCC Clause 20.

**22. Delays in the Supplier's Performance**

22.1. Delivery of the Goods and performance of Services shall be made by the Supplier in accordance with the time schedule prescribed by the Procuring Agency in the Schedule of Requirements.

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22.2. If at any time during performance of the Contract, the Supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Procuring Agency in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Procuring Agency shall evaluate the situation and may at its discretion extend the Supplier's time for performance, with or without liquidated damages, in which case the extension shall be ratified by the parties by amendment of Contract.

22.3. Except as provided under GCC Clause 25, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of liquidated damages pursuant to GCC Clause 23, unless an extension of time is agreed upon pursuant to GCC Clause 22.2 without the imposition of liquidated damages.

### **23. Liquidated Damages**

23.1. Subject to GCC Clause 25, if the Supplier fails to deliver any or all

of the Goods or to perform the Services within the period(s) specified in the Contract, the Procuring Agency shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the percentage specified in SCC of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the percentage specified in SCC. Once the maximum is reached, the Procuring Agency may consider termination of the Contract pursuant to GCC Clause 24 along with other remedies available under PPR-14.

### **24. Termination for Default**

24.1. The Procuring Agency, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate this Contract in whole or in part:

- (a) if the Supplier fails to deliver any or all of the Goods within the period(s) specified in the Contract, or within any extension thereof granted by the Procuring Agency pursuant to GCC Clause 22;
- (b) if the Supplier fails to perform any other obligation(s) under the Contract; or
- (c) if the Supplier, in the judgment of the Procuring Agency has engaged in corrupt practices in competing for or in executing the Contract. For the purpose of this clause, corrupt practices will be defined as per Section-2 (d) of The PPRA Act, 2009. *"Corrupt practices" in respect of procurement process, shall be as given in S-2 (d) of PPRA, Act, 2009:*



- (d) *“corrupt practice” means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official, bidder or Contractor in the procurement process or in Contract execution to the detriment of the procuring agency; or misrepresentation of facts in order to influence a procurement process or the execution of a Contract, collusive practices among bidders (prior to or after bid submission) designed to establish bid prices at artificial, noncompetitive levels and to deprive the procuring agency of the benefits of free and open competition and any request for, or solicitation of anything of value by any public official in the course of the exercise of his duty; it may include any of the following:*
- vi. *coercive practice by impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence the actions of a party to achieve a wrongful gain or to cause a wrongful loss to another party;*
  - vii. *collusive practice by arrangement between two or more parties to the procurement process or Contract execution, designed to achieve with or without the knowledge of the procuring agency to establish prices at artificial, noncompetitive levels for any wrongful gain;*
  - viii. *offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence the acts of another party for wrongful gain;*
  - ix. *any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;*
  - x. *obstructive practice by harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a Contract or deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements before investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or acts intended to materially impede the exercise of inspection and audit process*

24.2. In the event the Procuring Agency terminates the Contract in whole or in part, pursuant to GCC Clause 24.1, the Procuring Agency may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Procuring Agency for any excess costs for

such similar Goods or Services. However, the Supplier shall continue performance of the Contract to the extent not terminated.

## **25. Force Majeure**

25.1. Notwithstanding the provisions of GCC Clauses 22, 23, and 24, the Supplier shall not be liable for forfeiture of its Performance Guarantee, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

25.2. For purposes of this clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the Procuring Agency in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes. Both, the Procuring Agency and the Supplier, may agree to exclude certain widespread conditions e.g: epidemics, pandemics, quarantine restrictions etc. from the purview of "Force Majeure".

25.3. If a Force Majeure situation arises, the Supplier shall promptly notify the Procuring Agency in writing of such condition and the cause thereof. Unless otherwise directed by the Procuring Agency in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event. Any difference of opinion concerning "Force Majeure" may be decided through means given herein below.

## **26. Termination for Insolvency**

26.1. The Procuring Agency may at any time terminate the Contract by

giving written notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Procuring Agency.

## **27. Termination for Convenience**

27.1. The Procuring Agency, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Procuring Agency's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

27.2. The Goods that are complete and ready for shipment (if applicable) within thirty (30) days after the Supplier's receipt of notice of termination shall be accepted by the Procuring Agency on the Contract terms and prices. For the remaining Goods, the Procuring Agency may choose:

(a) to have any portion completed and delivered at the Contract terms and prices; and/or

(b) to cancel the remainder and pay to the Supplier an agreed amount for partially completed Goods and Services and for materials and parts previously procured by the Supplier.

## **28. Resolution of Disputes**

28.1. After signing the contract or issuance of purchase order, The Procuring Agency and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

28.2. If, after thirty (30) days from the commencement of such informal negotiations, the Procuring Agency and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms specified in SCC. These mechanisms may include, but are not restricted to, conciliation mediated by a third party, adjudication in an agreed and/or arbitration as per rule 68 of PPR-14 and in accordance with Arbitration Act-1940.

## **29. Governing Language**

29.1. The Contract shall be written in the language specified in SCC.

Subject to GCC Clause 30, the version of the Contract written in the specified language shall govern its interpretation. All correspondence and other documents pertaining to the Contract which are exchanged by the parties shall be written in the same language.

## **30. Applicable Law**

30.1. The Contract shall be interpreted in accordance with the laws of Punjab (Pakistan) unless otherwise specified in SCC.

## **31. Notices**

31.1. Any notice given by one party to the other pursuant to this Contract shall be sent to the other party in writing or by any information technology mean for the time being in use and acceptable in ordinary course of business to the other party's address specified in SCC.

31.2. A notice shall be effective when delivered or on the notice's effective date, whichever is later.

## **32. Taxes and Duties**

32.1. Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods & Services to the Procuring Agency. In case of imposition of new taxes/duties or concession thereof after the deadlines for the submission of bids the effect thereof shall be borne or availed by the procuring agency as the case may be.

**33. Contract period**

one (01) year, starting from the date of issuance of notification of award, delivery, installation & commissioning of all Goods, till end of warranty period.

## Section-VI. Special Conditions of Contract

### Special Conditions of Contract

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. The corresponding clause number of the GCC is indicated in parentheses.

#### 1. Definitions (GCC Clause 1)

GCC 1.1 (g)—The Procuring Agency is: **PROJECT DIRECTOR, IMPLEMENTATION OF MASTER PLAN OF SAFARI ZOO, LAHORE**

GCC 1.1 (h)—The Procuring Agency's country is: **PAKISTAN**

GCC 1.1 (i)—The Supplier is: **AWARDEE**

#### 2. Country of Origin (GCC Clause 3)

*[All countries and territories as indicated in Section IV, BDS, of the Bidding documents, as ineligible may be mentioned here]*

#### 3. Performance Guarantee (GCC Clause 7)

GCC 7.1—As per rule 56 of PPR-14, the amount of Performance Guarantee, as a percentage of the Contract Price, shall be: **10% OF THE CONTRACT AMOUNT**

*[The following provision should be used in the case of Goods having warranty obligations.]*

GCC 7.4—the Performance Guarantee shall be retained for to cover the Supplier's warranty obligations or defect liability period in accordance with Clause GCC 15.2

#### 4. Inspections and Tests (GCC Clause 8)

GCC 8.6—Inspection and tests prior to shipment of Goods and at final acceptance are as follows: *[if so required by the Procuring Agency]*

#### 5. Packing (GCC Clause 9)

*GCC 9.2—[This SCC shall supplement GCC Clause 9.2, exact details of the requisite packages be provided]*

## **6. Delivery and Documents**

**(GCC Clause 10)** *[format of contract is to be decided by the Procuring Agency, however, a model provision for DDP is as follows]*

**Sample provision (DDP terms)**

GCC 10.3—Upon shipment, the Supplier shall notify the Procuring Agency the full details of the shipment, including Contract number, description of Goods, quantity and usual transport document. The Supplier shall mail the following documents to the Procuring Agency:

- (i) copies of the Supplier’s invoice showing Goods’ description, quantity, unit price, and total amount;
- (ii) original and two copies of the usual transport document (for example, a negotiable bill of lading, a non-negotiable sea waybill, an inland waterway document, an air waybill, a railway consignment note, a road consignment note, or a multimodal transport document) which the buyer may require to take the goods;
- (iii) copies of the packing list identifying contents of each package;
- (iv) Insurance Certificate;
- (v) Manufacturers or Supplier’s warranty certificate;
- (vi) Where applicable (Pre shipment/ port/ Procuring Agency Delivery site, inspection certificate), issued by the Procuring Agency nominated inspection agency, and the Supplier’s factory inspection report (Inspection type depends on the nature of procurement and volume of procurement); and
- (vii) Certificate of origin.

*[Other similar documents should be listed, depending upon the Incoterm provisions.]*

**7. Insurance**

**(GCC Clause 11)** *[where applicable]*

GCC 11.1— The Goods supplied under the Contract shall be **delivered duty paid (DDP)** under which risk is transferred to the buyer after having been delivered, hence insurance coverage is sellers’ responsibility. Since the Insurance is sellers’ responsibility, they may arrange appropriate coverage.

**8. Incidental Services (GCC Clause 13)**

GCC 13.1—Incidental services to be provided are:

*[Selected services covered under GCC Clause 13 and/or other should be specified with the desired features. The price quoted in the Bid price or agreed with the selected Supplier shall be included in the Contract Price.]*

## **9. Spare Parts**

(GCC Clause 14) **[where applicable**



GCC 14.1—Additional spare parts requirements are:

**Sample provision**

GCC 14.1—Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods. Other spare parts and components shall be supplied as promptly as possible, but in any case, within six (6) months of placing the order and opening the letter of credit.

**10. Warranty**

**(GCC Clause 15)** *[may be modified by the Procuring Agency as per its requirements]*

**Sample provision**

GCC 15.2—In partial modification of the provisions, the warranty period shall be **as mentioned in Section - III** from date of acceptance/satisfactory installation of the Goods. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the Contract. If, for reasons attributable to the Supplier, these guarantees are not attained in whole or in part, the Supplier shall, at its discretion, either:

(a) make such changes, modifications, and/or additions to the Goods or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own cost and expense and to carry out further performance tests in accordance with SCC 4,

**or**

(b) pay liquidated damages to the Procuring Agency in case of failure to meet the contractual guarantees. The rate of these liquidated damages shall be (\_\_\_\_\_).

*[rate to be decided by the Procuring Agency but it should be reasonable]*

GCC 15.4 & 15.5—The period for correction of defects in the warranty period is: 02 Weeks

**12. Payment (GCC Clause 16)**

**Sample provision**

GCC 16.1—The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:

**Payment for Goods supplied:** *[to be decided by the Procuring Agency as per rule-62 of PPR-14]*

Payment may be made in Pak. Rupees in the following manner:

- (i) **Treasury Cheque, or**
- (ii) **Cross Cheque**

### **13. Prices (GCC Clause 17)**

#### ***Sample provision***

GCC 17.1—Prices shall be fixed and shall not be adjusted.

### **14. Liquidated Damages (GCC Clause 23)**

GCC 23.1—Applicable rate: **one-half (0.5) percent per week**

Maximum deduction: **ten (10) percent of the Contract Price**

*[Applicable rate shall not exceed one-half (0.5) percent per week, and the maximum shall not exceed ten (10) percent of the Contract Price after that Procuring Agency may proceed for the termination of contract along-with other remedies available under PPR-14.]*

### **15. Resolution of Disputes (GCC Clause 28)**

GCC 28.2—The dispute resolution mechanism to be applied pursuant to GCC Clause 28.2 shall be as follows:

As per rule-68 of PPR-14, in the case of a dispute between the Procuring Agency and the Supplier, the dispute shall be referred for arbitration in accordance with the Arbitration Act 1940.

### **16. Governing Language (GCC Clause 29)**

GCC 29.1—The Governing Language shall be: **ENGLISH**

### **17. Applicable Law (GCC Clause 30)**

GCC 30.1-The Contract shall be interpreted in accordance with the laws applicable in the jurisdiction of the province of Punjab (Pakistan):

## 18. Notices (GCC Clause 31)

GCC 31.1—Procuring Agency’s address for notice purposes: **PROCURING AGENCY ADDRESS**

—Supplier’s address for notice purposes: **AWARDEE’S ADDRESS**

## Section-VII. Schedule of Requirements

### 7.1 Schedule of Requirements

The delivery schedule expressed as weeks stipulates a delivery date which is the date at which delivery is required.

In order to determine the correct date of delivery hereafter specified, the Procuring Agency has taken into account the additional time that will be needed for international or national transit to the Project Site or to another common place.

<b>Lot No.</b>	<b>Description</b>	<b>Quantity</b>	<b>Delivery Schedule (Weeks)</b>
<b>1</b>	Procurement of a Turnkey Solution Comprising E-Ticketing System, Ai Integrable IP Based Cameras, Fleet Management System, Safari Animal Webcam, IT Infrastructure and Datacenter for Lahore Safari	01	08 Weeks

## Section-VIII: Sample Forms

### Notes on the Sample Forms

The Bidder shall complete and submit with its Bid the **Bid Form** and **Price Schedules** pursuant to ITB Clause 2.2.3 & 2.3.4 and in accordance with the requirements included in the Bidding documents.

When requested in the Bid Data Sheet, the Bidder should provide the **Bid Security**, either in the form included hereafter or in another form acceptable to the Procuring Agency, pursuant to ITB Clause 2.3.8

The **Contract Form**, when it is finalized at the time of contract award, should incorporate any corrections or modifications to the accepted Bid resulting from price corrections pursuant to ITB Clause 2.5.6 and GCC Clause 17, acceptable deviations e.g., payment schedule pursuant to GCC 16, spare parts pursuant to ITB Clause 2.3.6 & 2.3.7, or quantity variations pursuant to ITB Clause 2.6.5. The Price Schedule and Schedule of Requirements, deemed to form part of the contract, should be modified accordingly.

The **Performance Guarantee** and **Bank Guarantee for Advance Payment** forms should not be completed by the Bidders at the time of their Bid preparation. Only the successful Bidder will be required to provide Performance Guarantee and bank guarantee for advance payment in accordance with one of the forms indicated herein or in another form acceptable to the Procuring Agency and pursuant to GCC Clause 7.3 and SCC 10, respectively.

The **Manufacturer's Authorization** form should be completed by the Manufacturer, as appropriate, pursuant to ITB Clause 2.3.6(iii).

**8.1 Bid Form**

**(For Turnkey Solution)**

*[To be signed & stamped by the Bidder and reproduced on the letter head. To be attached with the Financial Bid, in case of Single Stage Two Envelope Procedure]*

Date: \_\_\_\_\_

To: *[name and address of Procuring Agency]*

Gentlemen and/or Ladies:

Having examined the Bidding documents including Addenda Nos. *[insert numbers]*, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply and deliver *[description of goods and services]* in conformity with the said Bidding documents for the sum of *[total Bid amount in words and figures]* or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Bid.

We undertake, if our Bid is accepted, to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements.

If our Bid is accepted, we will obtain the guarantee of a bank in a sum equivalent to \_\_\_\_\_ percent of the Contract Price for the due performance of the Contract, in the form prescribed by the Procuring Agency.

We agree to a Bid by this Bid for a period of *[number]* days from the date fixed to Bid opening under Clause 2.3.9 of the Instructions to Bidders, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal Contract is prepared and executed *(if required)*, this Bid, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.

Commissions or gratuities, if any, paid or to be paid by us to agents relating to this Bid, and to contract execution if we are awarded the contract, are listed below:

Name and address of agent	Amount and Currency	Purpose of Commission or gratuity
_____	_____	_____
_____	_____	_____
(if none, state "none")	_____	_____

We understand that you are not bound to accept the lowest or any Bid you may receive.

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

\_\_\_\_\_  
*[signature]*

\_\_\_\_\_  
*[in the capacity of]*

Duly authorized to sign Bid for and on behalf of \_\_\_\_\_



**8.2 Bidder Members Information Form (If Applicable)**  
**(For Turnkey Solution)**

*{To be reproduced and signed & stamped by the lead partner and all JV members on their letter Pad, to be attached with Technical Bid in addition to the JV agreement}*

*{The Bidder shall fill in this Form in accordance with the instructions indicated below. The following table shall be filled in for the Bidder and for each member of a Joint Venture}.*

Date: *[insert date (as day, month and year) of Bid submission]*

RFB No.: *[insert number of RFB process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

1. Bidder's Name: <i>[insert Bidder's legal name]</i>
2. Bidder's JV Member's name: <i>[insert JV's Member legal name]</i>
3. Bidder's JV Member's country of registration: <i>[insert JV's Member country of registration]</i>
4. Bidder's JV Member's year of registration: <i>[insert JV's Member year of registration]</i>
5. Bidder's JV Member's legal address in country of registration: <i>[insert JV's Member legal address in country of registration]</i>
6. Bidder's JV Member's authorized representative information Name: <i>[insert name of JV's Member authorized representative]</i> Address: <i>[insert address of JV's Member authorized representative]</i> Telephone/Fax numbers: <i>[insert telephone/fax numbers of JV's Member authorized representative]</i> Email Address: <i>[insert email address of JV's Member authorized representative]</i>
7. Attached are copies of original documents of <i>[check the box(es) of the attached original documents]</i> -- Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.4. -- In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Purchaser, in accordance with ITB 4.6.
8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

**8.3. Manufacturer's Authorization Form (If Applicable)**  
***(For Turnkey Solution)***

*[To be signed and stamped by the Bidder and to be attached with Technical Bid]*

[See Clause 2.3.6 (iii) of the Instructions to Bidders.]

To: *[name of the Procuring Agency]*

WHEREAS *[name of the Manufacturer]*, who are established and reputable manufacturers of *[name and/or description of the goods]* having factories at *[address of factory]* do hereby authorize *[name and address of Agent]* to submit a Bid, and subsequently negotiate and sign the Contract with you against for the above goods manufactured by us.

We hereby extend our full guarantee and warranty as per Clause 15 of the General Conditions of Contract for the goods offered for supply by the above firm against this Invitation to Bids.

---

*[Signature for and on behalf of Manufacturer]*

*Note: This letter of authority should be on the letterhead of the Manufacturer and should be signed by a person competent and having the power of attorney to bind the Manufacturer. It should be included by the Bidder in its Bid.*

### 8.4. Bidder Profile Form

**(For Turnkey Solution)**

*[To be signed & stamped by the Bidder and reproduced on the letter head. To be attached with Technical Bid]*

Sr.#	Particulars
1.	Name of the company:
2.	<b>Registered Office:</b>
	Address:
	Office Telephone Number:
	Fax Number:
3.	<b>Contact Person:</b>
	Name:
	Personal Telephone Number:
	Email Address:
4.	<b>Local office if any:</b>
	Address:
	Office Telephone Number:
	Fax Number:
5.	<b>Registration Details:</b>

**a) Audited Financial Statement Attachment/Income Tax Returns (Last \_\_\_ years ) – (If Applicable)**

Yes	No
-----	----

**b) Details of Experience (Last \_\_\_ Years)**

(i)	<b>Similar Project (Agency/Department)</b>	<b>Item Name</b>
(ii)	<b>Value of total Projects/Tenders/POs</b>	<b>Amount</b>

**c) Staff Detail and last month Payroll – (If Applicable)**

Yes	No
-----	----

**8.5. General Information Form**  
**(For Turnkey Solution)**

*[To be signed & stamped by the Bidder and reproduced on the letter head. To be attached with Technical Bid]*

	Particulars			
<b>Company Name</b>				
<b>Abbreviated Name</b>				
<b>National Tax No.</b>			<b>Sales Tax Registration No</b>	
<b>PRA Tax No.</b>				
<b>No. of Employees</b>			<b>Company's Date of Formation</b>	

\*Please attach copies of NTN, GST Registration & Professional Tax Certificate

<b>Registered Office Address</b>		State/Province	
<b>City/Town</b>		Postal Code	
<b>Phone</b>		Fax	
<b>Email Address</b>		Website Address	

**8.6. Affidavit**  
**(For Turnkey Solution)**

*[To be printed on PKR 100 Stamp Paper, duly attested by oath commissioner. To be attached with Technical Bid]*

**Name:** \_\_\_\_\_  
*(Applicant)*

I, the undersigned, do hereby certify that all the statements made in the Bidding document and in the supporting documents are true, correct and valid to the best of my knowledge and belief and may be verified by employer if the Employer, at any time, deems it necessary.

The undersigned hereby authorize and request the bank, person, company or corporation to furnish any additional information requested by the *[name of Procuring Agency]* of the Punjab deemed necessary to verify this statement regarding my (our) competence and general reputation.

The undersigned understands and agrees that further qualifying information may be requested and agrees to furnish any such information at the request of the *[name of Procuring Agency]*. The undersigned further affirms on behalf of the firm that:

- (i) The firm is neither currently blacklisted by any Department nor any litigation is pending before PPRA or any other court of law competence in this regard against any such blacklisting order.
- (ii) The documents/photocopies provided with Bid are authentic. In case, any fake/bogus document was found at any stage, the firm shall be blacklisted as per Law/ Rules.
- (iii) Affidavit for correctness of information.
- (iv) Contractor/firm is not blacklisted or subject to any pending litigation with any Government or Public Department
- (v) Compliance to the Section – III “Technical Specifications” and Section – VII “Schedule of Requirements”

*[Name of the Contractor/ Bidder/ Supplier]* undertakes to treat all information provided as confidential.

*Signed by an authorized Officer of the company*

Title of Officer: \_\_\_\_\_

Name of Company: \_\_\_\_\_

Date: \_\_\_\_\_

**8.7. Performance Guarantee Form**  
**(For Turnkey Solution)**

To,

*[name and address of the Procuring Agency]*

**WHEREAS** (Name of the Contractor/Supplier)

\_\_\_\_\_ hereinafter called "the Contractor" has undertaken, in pursuance of "INVITATION TO BID FOR THE "PROVISION OF \_\_\_\_\_" procurement of the following:

1. **[Please insert details]**.

(Here in after called "the Contract").

**AND WHEREAS** it has been stipulated by you in the Contract that the Contractor shall furnish you with a bank guarantee by a scheduled bank for the sum specified therein as security for compliance with the Contractor's performance obligations in accordance with the Contract;

**AND WHEREAS** we have agreed to give the Contractor a Guarantee;

**THEREFORE WE** hereby affirm that we are Guarantor and responsible to you, on behalf of the Contractor, up to a total of \_\_\_\_\_ (Amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the Contractor to be in default under the Contract, and without cavil or argument, any sum or sums as specified by you, within the limits of \_\_\_\_\_ (Amount of Guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, or \_\_\_\_\_ [insert number of days] after the rectification of the Defects, whichever is later.

**[NAME OF GUARANTOR]**

Signature \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

Seal \_\_\_\_\_

Date \_\_\_\_\_

## 8.8. Technical Bid Form

*(For Turnkey Solution)*

*[To be signed & stamped by the Bidder and reproduced on the letter head. To be attached with Technical Bid]*

Lot # 01

### Item 1: E-Ticketing and Queue Management System

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>E-Ticketing and Queue Management (Equipment)</b>				
1	Touch Screen E-Ticketing Point-of-Sale Terminal with Customer Display	21		
2	High-Speed Thermal Ticketing Printer	21		
3	High-Quality Thermal Paper Rolls (required for the thermal printers)	L.S		
4	Cash Management Drawer	21		
5	LED Gender/Information Signage Display Board	26		
6	Cordless Industrial Handheld Barcode Scanner with WiFi connectivity	09		
7	Queue Flapper Gate with stainless steel, glass barrier, RFID/QR Code/Barcode access control, anti-passback	14		
8	Automatic Parking Barrier with durable steel construction, weather-resistant powder coating and safety features.	07		
9	IP67 Waterproof GPS Tracking Bracelet/band with SOS Button Emergency	100		

#### **E-TICKETING AND QUEUE MANAGEMENT (EQUIPMENT)**

##### **Minimum System Requirement**

**Project Scope:** Lahore Safari Parking and Visitor Ticketing System

The Lahore Safari Parking and Visitor Ticketing System will encompass the design, development, and implementation of an E-Ticketing solution for efficient management of the Lahore Safari visitor experience, including parking facilities and ticketing operations.

##### **System Deployment:**

The system will be self-hosted to ensure data security and quick response times.

It will be compatible with various platforms, including Windows, Linux, macOS, and Android.

Server requirements will be met to host the application and database efficiently.

##### **Database Management:**

The SQL-based database will be structured for managing data related to visitor ticketing, parking, and related operations.

##### **User Interface:**

The user interface will include role-based access control for different user categories, such as administrators, cashiers, and managers.

It will feature a user-friendly and intuitive design that is responsive across various devices, including desktops, tablets, and mobile phones.

**Functionality:**

**Visitor Ticketing:**

Creation, processing, and management of visitor ticket sales transactions.

A product catalog to manage various types of tickets, pricing, and attributes.

Customer management to store visitor information and purchase history.

Integration with multiple payment gateways for a convenient payment process.

Reporting and analytics tools for generating sales reports and insights.

**Parking Management:**

Inventory management for parking spots, monitoring availability, and issuing alerts for full parking lots.

Order fulfillment, which includes managing parking reservations and tracking entry and exit.

Promotions and Discounts:

Capability to apply discounts, promotions, and special offers.

**Business Intelligence:**

Tools for gathering insights into visitor behavior and business performance, enabling data-driven decisions.

**Integration:**

APIs will be provided for third-party integrations, such as accounting and CRM systems.

Hardware integration with receipt printers, barcode scanners, and more for efficient operations.

Payment gateways will be integrated to offer a variety of payment options for visitors.

**Security:**

Sensitive data, including visitor information and transactions, will be encrypted.

Secure user authentication and login mechanisms will be implemented.

Audit trails will monitor and track user actions to ensure accountability.

Automated database backups will be scheduled for data protection.

**Scalability:**

The system will be designed to handle high transaction volumes effectively.

Support for load balancing and scaling out to accommodate growing visitor numbers.

**Localization:**

The system will support localization for various languages and currency conversions.

**Support and Maintenance:**

Comprehensive documentation will be provided for users and administrators.

Technical support options will be available, including support plans, forums, and helpdesk assistance.

**Regulatory Compliance:**

The system will ensure compliance with the Payment Card Industry Data Security Standard (PCI-DSS) and the General Data Protection Regulation (GDPR), where applicable.

**Performance Requirements:**

The system will aim to achieve minimal response times for user actions.

Efficient database performance will be maintained to enable quick data retrieval.

This project aims to provide Lahore Safari with an advanced E-Ticketing system that enhances visitor experiences, ensures data security, offers convenience through multiple payment options, and empowers the management with valuable insights for continuous improvements. The system will help streamline parking operations and provide visitors with a seamless ticketing process while adhering to relevant standards and regulations.



## **Minimum Specifications for Touch Screen E-Ticketing Point-Of-Sale Terminal with Customer Display**

### **Hardware:**

Processor: Core i5, 2.4 GHz clock speed, RAM: 8 GB, Storage: 256 GB Connectivity: Ethernet port, Wi-Fi, Bluetooth.

### **Display:**

Touchscreen: Capacitive, 12-inch diagonal size.  
Resolution: Full HD (1920 x 1080 pixels).

### **Operating System:**

Android, Windows

### **Ports:**

4 USB ports for peripherals, 1 Ethernet port, 1 Wi-Fi antenna port, 1 Bluetooth antenna port.

### **Wireless Connectivity:**

Built-in Wi-Fi, Bluetooth 5.0.

### **Security:**

Biometric fingerprint scanner, RFID card reader.

### **Customer Display:**

LED Display: Bright and clear LED display for easy visibility.  
Minimum 2-line display for showing transaction information.  
Adjustable Stand: Flexible stand for optimal viewing angle.  
USB or Serial: Easy connectivity to the POS terminal.  
Transaction Details: Display transaction amount, items purchased, and payment information.  
Promotions (Optional): Ability to display promotional messages or advertisements.

### **Physical Design:**

Sturdy and compact design, IP65 rated for dust and water resistance, MIL-STD-810G compliant for durability.

### **Power:**

Power supply: 12 VDC, 3.3 A. or power optimized

### **Environmental Requirements:**

As per local weather conditions

### **Certifications:**

CE, FCC, RoHS compliant.

### **Compatibility:**

POS Application: Compatible with e-ticketing POS application.  
Integration: Integration with other components of the system, such as the data center, barcode scanners, and customer displays.

### **Customization:**

Configurable settings for tailored usage, such as the language, currency, and tax rates.

### **Warranty:**

Warranty Period: 1 year.

## **MINIMUM SPECIFICATIONS FOR HIGH-SPEED THERMAL TICKETING PRINTER:**

### **Printing Technology:**

Thermal printing technology for fast and high-quality ticket printing.

### **Printing Speed:**

Minimum printing speed of 200 mm/s.

**Paper Roll Compatibility:**

Compatible with standard 80mm thermal paper rolls.

**Print Resolution:**

High-resolution printing for clear text and graphics (minimum 300 dpi).

**Connectivity:**

USB and Ethernet ports for easy integration with the POS system.

**Auto Cutter:**

Built-in auto cutter for precise ticket cutting after printing.

**Reliability:**

Long-lasting and reliable performance for continuous operation.

**Power:**

Power supply: 12 VDC, 2 A. or power optimized

**Environmental Requirements:**

As per local weather conditions

**Certifications:**

CE, FCC, RoHS compliant.

**Compatibility:**

Seamless integration with POS and ticketing systems.

**Warranty:**

Warranty Period: 1 year.

**MINIMUM SPECIFICATIONS FOR CASH MANAGEMENT DRAWER:****Design and Build:**

Robust Construction: Durable metal construction to withstand regular use.

Size: Standard dimensions to accommodate different currency notes and coins.

**Locking Mechanism:**

Keyed Lock: Secure locking mechanism with key access.

Manual Release: Emergency manual release in case of power failure.

**Compartments:**

Currency Slots: Adjustable currency compartments for various denominations.

Coin Trays: Removable coin trays for organized storage.

**MINIMUM SPECIFICATIONS FOR LED GENDER/INFORMATION SIGNAGE DISPLAY BOARD****General Specifications:**

Type: LED Signage Gender Board

Housing: Durable, lightweight, and weather-resistant aluminum housing

Installation: Wall mountable or ceiling suspension options

**Display and Illumination:**

Display Type: LED Illuminated Display

Display Area: at least 100 square inches

Light Color: Blue for Male, Pink for Female (customizable)

Brightness: Adjustable brightness levels for varying lighting conditions

Viewing Angle: Wide viewing angle for visibility from different directions

Day/Night Mode: Auto-adjusts brightness for optimal visibility during different times

**Text and Symbols:**

Gender Icons: Clear male and female icons for easy identification

Text Labels: "Male" and "Female" labels for enhanced clarity (optional)

Customization: Ability to display custom text or icons if required

**Wireless Control:**

Connectivity: Bluetooth connectivity for remote control  
Control App: Mobile app for easy management of LED settings  
Control Features: On/off, brightness adjustment, display mode selection

**Power and Energy Efficiency:**

Power Input: Standard AC power (110-240V), Power optimized  
Energy Efficiency: Utilizes energy-efficient LED technology  
Auto-Sleep Mode: Automatically enters sleep mode during off-peak hours

**Environmental Considerations:**

Indoor/Outdoor Use: Suitable for both indoor and sheltered outdoor environments  
Weatherproofing: IP65-rated for protection against dust and water ingress

**Safety and Compliance:**

Safety Standards: Complies with relevant electrical and safety standards  
Certifications: CE, FCC, RoHS compliant

**Customization and Branding:**

Custom Branding: Ability to customize board with branding elements  
Color Options: Customizable LED colors to match branding aesthetics

**Mounting and Installation:**

Mounting Options: Wall mountable using brackets or hooks, or ceiling suspension  
Ease of Installation: User-friendly installation process

**Minimum Specifications for Cordless Industrial Handheld Barcode Scanner with WiFi connectivity**

**Wireless Connectivity:** Bluetooth 5.0

**Physical Specifications:**

Housing: Ruggedized, IP65 rated for durability and resistance to dust and water ingress

**Scan Performance:**

Scan Engine: High-performance laser engine  
Scan Rate: 20 scans per second  
Scan Range: 0 to 200 cm (adjustable for specific use cases)  
Supported Symbologies: Bar code and QR Code.

**Battery and Power:**

Battery Type: Rechargeable Lithium-ion  
Battery Capacity: 2,600 mAh  
Operating Time: Up to 14 hours of continuous scanning  
Charging Time: 3 hours (typical)

**User Interface:**

Display: 2.4-inch color LCD display  
Keypad: 10 physical keys  
Feedback: LED indicators, vibration, and audible alerts

**Wireless Connectivity:**

Bluetooth Range: Up to 100 meters  
Wireless Security: WPA2 encryption for secure data transmission

**Data Storage:**

Internal Memory: 8 GB for offline data storage

**Environmental Conditions:**

Operating Temperature: as per local weather conditions, weather resistant. Indoor and outdoor usage

**Software and Compatibility:**

Supported OS: Windows, Android, iOS

SDK Availability: Software Development Kit (SDK) for custom application development  
Firmware Updates: Over-the-air firmware updates for continuous improvement

**Accessories:**

Charging Cradle: Optional docking station for convenient charging and storage  
Carrying Options: Holster, wrist strap, belt clip

**Certifications:**

Environmental: IP65

**MINIMUM SPECIFICATIONS FOR FLAPPER GATES**

**Type:** Flapper gates with stainless steel glass barrier, RFID/QR Code/ Barcode access control, anti-pass back

**Scanning mode:** Built-in QR/RFID scanner

**Power Requirements:** power optimized

**Working Temperature:** As per local weather conditions

**Working Humidity:** 5% to 80%

**Working Environment:** Indoor/outdoor

**Speed of Throughput:** 25/ minute

**Dimension (L\*W\*H):** 1150\*300\*1000 (mm)

**LED Indicator support:** Yes

**Lid Material:** Stainless Steel or higher

**Barrier Material:** Acrylic (optional: tempered glass)

**Barrier Movement:** Retracting

**Emergency Mode:** Supported

**Warranty:** 1 year

**MINIMUM SPECIFICATIONS FOR AUTOMATIC PARKING BARRIER WITH DURABLE STEEL CONSTRUCTION, WEATHER-RESISTANT POWDER COATING AND SAFETY FEATURES.**

**General Specifications:**

Type: Automatic Parking Barrier

Operation: Electrically powered

Material: Durable steel construction

Finish: Weather-resistant powder coating

Color: Standard color options available

Dimensions (LxWxH): 328mm x 286mm x 934mm (can be change as per the site requirement)

**Barrier Arm:**

Arm Length: 3m / 6m

Arm Material: Aluminum alloy

Arm Shape: Rectangular

Arm Color: Standard color options available

Opening/Closing Time: 3s / 6s

**Motor and Drive:**

Motor Type: Brushless DC motor

Power Supply/ consumption: should be optimized

**Manual Release:**

Manual release mechanism for emergencies

**Safety Features:**

Safety Sensors: Infrared photocells for obstacle detection

Auto Reverse: Barrier arm automatically reverses upon obstacle detection

LED Lights: Integrated LED lights for visibility

Reflective Stickers: High-visibility reflective stickers on the arm

Anti-Crash Mechanism: Mechanism to prevent arm from crashing down

**Control and Operation:**

- Remote Control: Wireless remote control included
- Access Control: Compatibility with various access control systems
- Manual Operation: Manual control option in case of power failure
- Operating Modes: Standard open/close, free entry, timed operation, etc.
- Integration: Can be integrated with parking management software

**Environmental and Operating Conditions:**

Weather Resistance: Suitable for outdoor use in various weather conditions

**Mounting and Installation:**

- Mounting Options: Surface mount or in-ground mount
- Base Plate: Included for surface mount installation
- Anchors: Anchors provided for in-ground installation
- Installation Manual: Detailed installation manual included

**Warranty:**

Warranty Period: 1 year

**MINIMUM SPECIFICATIONS FOR IP67 WATERPROOF GPS TRACKING BRACELET/BAND WITH SOS BUTTON EMERGENCY**

**General Specifications:**

- Form Factor: Wristband, watch, or similar wearable form factor
  - Weight: Lightweight and comfortable for extended wear
  - Battery: 1000mAH (along with charging station)
  - Water Resistance: IP67
  - GPS Accuracy: Up to 16 meters (52 feet)
  - Real-time GPS tracking: Track the wearer's location in real time
  - Geofencing: Set up virtual boundaries to receive alerts when the wearer enters or leaves a specific area.
  - Fall Detection: Detect falls and send alerts to emergency contacts
- Including all accessories etc. sim etc.

**Additional Features**

**Design and Comfort:**

- Lightweight and comfortable design for extended wear
- Interchangeable straps for personalization
- Durable construction for everyday use

**Security:**

- Data encryption to protect user privacy
- Password protection to prevent unauthorized access
- Find My Device feature to locate a lost or stolen wristband

**Item 2: Ai Integratable IP Camera, CCTV Cameras and Web Streaming Cameras**

SR. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>AI Integratable IP Camera</b>				
1	High-performance 4K Ultra HD IP Camera with AI Integration	24		

2	High Resolution IP Cameras (CCTV Cameras)	26		
3	High Resolution IP Camera for live animal streaming to website	43		

## **MINIMUM SPECIFICATIONS/REQUIREMENT FOR HIGH-PERFORMANCE 4K ULTRA HD IP CAMERA WITH AI INTEGRATION**

### **Project Scope: AI-Based Footfall Counting Mechanism**

The AI-Based Footfall Counting Mechanism project aims to develop and implement a cutting-edge solution for accurately counting and analyzing visitor footfall at designated locations. The system employs state-of-the-art artificial intelligence and computer vision technologies to provide real-time data insights.

### **System Deployment:**

The system will be installed on a dedicated server or cloud infrastructure for optimal performance and scalability.

It will be compatible with Linux-based operating systems, such as Ubuntu and CentOS, to leverage AI frameworks effectively.

High-performance GPUs will be utilized to facilitate real-time image processing.

### **Tracking and Telematics:**

Geofencing capabilities for creating custom virtual boundaries and triggering alerts.

Speed monitoring to keep track of the system's operational velocity.

Route optimization for efficient system deployment.

### **AI-Based Footfall Counting:**

The AI model will be designed for real-time object detection with an accuracy rate of up to 95%.

Custom datasets will be used for training the object detection model to identify people accurately.

Age and gender classification using AI with an accuracy rate of up to 90%.

Image preprocessing to enhance detection accuracy.

### **Data Flow:**

The system will capture images from designated cameras at the monitored location.

Real-time object detection algorithms will identify people within the images.

Age and gender classification will categorize individuals.

Data will be stored in a dedicated database, including detection, classification, and timestamp information.

### **Database Schema:**

The database will include a Visitors Table for storing visitor data, including timestamps, age, gender, and other relevant information.

A Statistics Table will store daily, weekly, and monthly footfall statistics.

### **User Interface:**

The system will provide a web-based dashboard for users to visualize visitor footfall data.

Configurable settings for image sources, thresholds, and reporting intervals will be accessible to administrators.

### **Integration:**

APIs will be provided for third-party integration, such as reporting tools and Safari management systems.

### **Security:**

- Data encryption will secure sensitive data stored in the database.
- Robust user authentication and access controls will be in place.
- System audit trails will monitor user actions for accountability.
- Regular automated backups will ensure data security and recovery capabilities.

### **Performance Requirements:**

The system will perform real-time processing of images for accurate counting and classification.

It will be scalable to handle varying visitor volumes without compromising accuracy.

**Deployment and Maintenance:**

- The system will offer an easy installation process on the server or cloud environment.
- It will have the capability for remote updates and patches.
- Ongoing monitoring of system health and performance will be maintained.

**Testing and Quality Assurance:**

The project will undergo rigorous testing, including unit testing, integration testing, and performance testing.

The AI-Based Footfall Counting Mechanism project will provide Lahore Safari with an advanced solution for accurately counting and classifying visitors in real time, enabling data-driven decisions and insights into visitor behavior. The system will offer robust security, scalability, and compliance with data protection regulations, ultimately enhancing visitor experiences and Safari management capabilities.

- Clear and detailed footage.

Resolution: 4K Ultra HD (3840 x 2160) resolution for sharp visuals.

Low-Light Performance: Yes

Day/Night Functionality: Automatic switching between day and night modes.

Infrared (IR) Illumination: Built-in IR LEDs with a range of up to 30 meters.

**AI Integration:**

Computer Vision Software: Compatible with any AI-powered Deep Learning analytics software.

People Detection: Accurate detection of people within the camera's view.

People Counting: Real-time counting of people entering and exiting.

Face Recognition: Accurate identification of people within the camera's view.

**Analytics and Detection:**

Motion Detection: Advanced motion detection algorithms.

Zone-Based Detection: Configurable detection zones for specific areas.

Tamper Detection: Alerts for camera tampering attempts.

Vehicle Detection: Accurate detection of vehicles within the camera's view.

**Video Analysis:**

Object Tracking: Tracks individuals as they move within the camera's view.

Dwell Time Analysis: Measures how long people spend in specific areas.

Heatmaps: Generates heatmaps showing high-traffic areas.

**Connectivity:**

Network Connectivity: Ethernet or Wi-Fi connectivity options.

Power over Ethernet (PoE): Ability to power the camera via the network cable.

**Storage and Recording:**

Local Storage: Supports onboard storage via SD card or external drives.

Cloud Integration: Option to upload footage to cloud storage.

**Integration:**

API Integration: Connects with computer vision software via APIs.

Third-Party Integration: Integration with security management systems.

**Remote Access:**

Mobile App: Access camera feed remotely through a dedicated app.

Browser Access: Web-based access for remote monitoring.

**Durability and Environment:**

Weatherproof: Built to withstand outdoor environments (IP66 rated).



Vandal-Resistant: Resistant to tampering and vandalism.

**Mounting Options:**

Wall or Ceiling or Pole Mounting: Flexible installation options.

**Power Efficiency:**

Low Power Consumption: Efficient energy usage for continuous operation.

**Warranty and Support:**

1 year onsite warranty

**MINIMUM SPECIFICATIONS/REQUIREMENT FOR HIGH RESOLUTION IP CAMERA**

**Project Scope:** IP Camera/CCTV Surveillance Solution with Software NVR

The IP Camera/CCTV Surveillance Solution with Software Network Video Recorder (NVR) project aims to establish a comprehensive and technologically advanced video surveillance system for Lahore Safari. This system will enhance security, visitor monitoring, and operational efficiency throughout the facility.

**System Deployment:**

- The surveillance system will include IP cameras strategically deployed across Lahore Safari.
- The software-based NVR will be hosted on dedicated servers within the Safari's infrastructure.

**Camera Deployment:**

- Installation of a designated number of IP cameras at key locations, including entrance gates, parking lots, enclosures, and visitor pathways.
- Varied camera types, including fixed, PTZ (Pan-Tilt-Zoom), and specialized cameras for specific surveillance needs.
- The quantities of PTZ and static cameras can be varied as per site location and client's requirement.

**Video Recording and Storage:**

- Continuous video recording and storage of footage, ensuring real-time and historical data availability.

**Camera Management:**

- Camera configuration, monitoring, and control through a centralized management interface.
- Real-time camera health and status monitoring to ensure uninterrupted surveillance.

**Motion Detection and Alerts:**

- Implementation of motion detection algorithms to trigger alerts for unusual activities.
- Real-time alerts and notifications to security personnel for immediate response.

**Video Analytics:**

- Integration with AI-based video analytics for object detection, people counting, and anomaly detection.
- Customizable analytics rules for various surveillance scenarios.

**Remote Access and Viewing:**

- Access to live camera feeds and recorded footage remotely through web and mobile applications.
- Secure remote access with user authentication and encryption.

**Scalability:**

The system will be designed to accommodate future expansion, including the addition of more cameras and storage capacity.

**Data Backup and Redundancy:**

- Scheduled data backup to prevent data loss.

- Redundancy measures for critical data and failover capabilities to ensure continuous surveillance.

**Integration:**

- Integration with the existing ticketing and visitor management system for real-time tracking and security alerts.
- Integration with the AI-based software analytics and future interventions.

**Maintenance and Support:**

- Ongoing maintenance and technical support services to ensure the system's health and performance.
- Regular software updates and patches for improved functionality and security.

The IP Camera/CCTV Surveillance Solution with Software NVR will provide Lahore Safari with state-of-the-art surveillance capabilities, enhancing security and operational efficiency. The project will enable real-time monitoring, precise analytics, and seamless integration with existing systems, contributing to a safer and more enjoyable visitor experience at the Safari.

**ADDITIONAL SPECIFICATIONS:**

**Type:** Fixed-dome / bullet (could be both as per the site requirement)

**Resolution:** 4MP

**Field of View:** 108°

**Night Vision:** Up to 30 meters (98 feet)

**Power Supply:** DC 12V or PoE

**Connectivity:** Ethernet (RJ-45) (wireless optional)

**Operating Temperature:** suitable for outdoor use

ONVIF compatibility (for PTZ cams)

**For Surveillance:**

For surveillance within the safari zoo premises (hotspots) and on entry/exit gate, PTZ cameras are required.

**MINIMUM SPECIFICATIONS/REQUIREMENT FOR HIGH RESOLUTION IP CAMERA FOR LIVE ANIMAL STREAMING TO WEBSITE**

**Project Scope:** Safari Animal Webcam Streaming for Website and Mobile App

The Safari Animal Webcam Streaming project aims to provide real-time video streaming of wildlife in Lahore Safari to enhance visitor engagement, education, and conservation efforts. Live streaming of safari animals will be made available through a dedicated website and mobile application.

**Camera Deployment:**

Installation of high-quality webcams at strategic locations within Lahore Safari to capture animal habitats and activities.

Deployment of cameras with the capability to stream high-definition video in real-time.

**Live Streaming Infrastructure:**

Establishment of a robust live streaming infrastructure for video capture, encoding, and distribution.

Ensuring low-latency, high-quality video streaming for website and mobile app viewers. Should be pole/wall mounted.

**Web and Mobile Applications:**

Development of a user-friendly website and a dedicated mobile application for both Android and iOS platforms.

Implementation of intuitive user interfaces for easy access to live animal streams. Web & mobile app development is software component; it will be single application for all Zoo's.

**Multiple Camera Feeds:**

Providing access to multiple camera feeds to showcase diverse wildlife areas within the safari. Cameras covering various animal enclosures, feeding stations, and watering holes.

**Video Archives:**

Archiving of live streams for later viewing, enabling users to revisit exciting animal moments. User-friendly navigation to access archived videos by date, animal species, or camera location.

**Accessibility:**

Ensuring web and mobile applications are accessible to a broad audience, including those with disabilities.

Providing video captions and screen reader compatibility.

**Security and Privacy:**

Implementing security measures to protect animal habitats and minimize disturbances from the cameras.

Ensuring the privacy and safety of animals and visitors.

**Integration:**

Integration with the Safari's visitor ticketing system to offer combined packages for park entry and online streaming access.

Collaborating with the IP Camera/CCTV Surveillance System to enhance security and surveillance.

**Monitoring and Maintenance:**

Real-time monitoring of camera health and video quality to ensure uninterrupted streaming.

Routine maintenance and technical support for both the hardware and software components.

The Safari Animal Webcam Streaming project will offer a captivating and educational experience to both on-site and remote visitors. It will contribute to wildlife conservation efforts, promote biodiversity awareness, and increase the engagement of a global audience with the remarkable wildlife found within Lahore Safari.

**Additional Specifications:**

Product Name: IP Camera

Product Description: A hardware device designed for capturing and streaming live video footage over IP networks.

**Key Features:**

**High-Resolution Imaging:** Equipped with a high-resolution camera sensor for stunning video quality.

**Optical Zoom:** Offers optical zoom capabilities for close-up shots of distant animals.

**Wide-Angle Lens:** Features a wide-angle lens for capturing broader views of wildlife landscapes.

**Low-Light Performance:** Excellent low-light sensitivity for night-time and low-light conditions.

**Remote Control:** Allows remote camera control and adjustment for optimal framing.

**Weatherproof Design:** Built to withstand harsh outdoor conditions, including rain and dust.

**Infrared Illumination:** Infrared LEDs for night vision and capturing nocturnal wildlife activity.

**High Frame Rate:** Delivers high frame rates for smooth and detailed live streaming.

**Mobile App Support:** Companion mobile app for remote monitoring and control.

**Security Features:** User access control, encryption, and data protection.

**Integration:** Compatible with popular streaming platforms and mobile apps.

**Storage Options:** Supports local storage and cloud storage for video archives.

**Customizable Alerts:** Configurable motion detection and alerting features.

**Easy Installation:** User-friendly installation and setup process.

**Compatibility:** Compatible with various browsers and mobile devices.

180-Degree Rotation.

Supports high-speed internet connection for streaming.

**Power Supply:**

PoE (Power over Ethernet): Power can be supplied via Ethernet cable.

External Power Supply: Optional external power source.

**Mounting Options:** Wall Mount / Pole Mounted / Ceiling Mounted

**Environmental Condition:** Suitable for outdoor use

**Mobile App Compatibility:** Supports iOS and Android platforms.

**Streaming Compatibility:** Compatible with popular streaming services and platforms (web).

### Item 3: Car/Vehicle/Fleet GPS Tracker

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>EV Car/Vehicle/Fleet GPS Tracker</b>				
1	EV tracker with GPS, real-time tracking, remote monitoring, and anti-theft	12		
<p><b>Minimum specification/requirements for Car/Vehicle/Fleet GPS Tracker</b></p> <p><b>GPS and Location Tracking:</b></p> <p>GPS Technology: Advanced GPS receiver for accurate location tracking</p> <p>Real-Time Tracking: Provides real-time location data</p> <p>Position Accuracy: High position accuracy for precise tracking</p> <p>Location Reporting: Periodic or event-triggered location reporting</p> <p><b>Connectivity:</b></p> <p>Network Compatibility: Supports 2G/3G/4G (LTE)</p> <p>Wireless Communication: Enables remote communication for tracking data</p> <p>SIM Card Slot: Accepts standard SIM cards for data connectivity</p> <p><b>Power Supply:</b></p> <p>Power Source: Designed for EV power systems or vehicle batteries</p> <p>Voltage Range: Wide voltage input range for compatibility with EVs</p> <p>Power Consumption: Low power consumption for minimal impact on EV battery</p> <p>Battery Backup: Integrated backup battery for tracking during power loss</p> <p>Battery Life: Provides extended backup power to ensure tracking continuity</p> <p><b>Geo-Fencing:</b></p> <p>Geofence Creation: Allows for setting custom geofences and zones</p> <p>Geo-Fence Alerts: Sends alerts upon entering or exiting geofenced areas</p> <p><b>Remote Monitoring:</b></p>				

Remote Access: Enables remote monitoring and control of the tracker  
 Data Retrieval: Allows retrieval of historical tracking data  
**Sensors and Data:**  
 Sensor Integration: Integration with vehicle sensors for additional data  
 OBD-II Compatibility: Optional compatibility with OBD-II diagnostic data  
**Anti-Theft and Immobilization:**  
 Anti-Theft Features: Includes anti-theft features and alerts  
 Vehicle Immobilization: Optional immobilization of the EV in case of theft  
**Driver Behavior Monitoring:**  
 Driver Scoring: Allows monitoring and scoring of driver behavior  
 Alerts for Violations: Provides alerts for speeding and other violations  
**Data Storage and Reporting:**  
 Data Storage: Internal storage for tracking data and event logs  
 Data Transfer: Data transfer to a central server or cloud platform  
**Integration:**  
 Software Integration: Compatibility with fleet management software and platforms  
 API Support: Allows integration with external systems via APIs  
**User Interface:**  
 User-Friendly Interface: Easy-to-navigate user interface for monitoring  
 Alert Notifications: Real-time alerts and notifications for actionable insights  
 Mobile Access: Access the system from mobile devices for remote monitoring

**Item 4: SMD and LED Screen**

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>SMD and LED Screen</b>				
1	Outdoor 12x12 feet p3.8 SMD Screen with mounting, controller, and Stadium Sound System	1		
2	12x10 feet p1.9 SMD Cinema Screen with high quality video processor/controller and 8.1 Cinema Sound System	1		
3	65 inch LED TV	12		

**MINIMUM SPECIFICATIONS/REQUIREMENTS FOR OUTDOOR P3.8 12X12 FEET SMD SCREEN WITH STADIUM SOUND SYSTEM**

**Display Specifications:**

Type: Outdoor SMD LED Display

Pixel Pitch: P3.8

Screen Size: 12x12 feet

LED Type: SMD (Surface-Mount Device) LED

**Sound System Specifications:**

Sound System Type: Stadium/outdoor Sound System

Sound Coverage: Up to 1000 square feet

**Construction and Build:**

Material: High-quality, weather-resistant steel construction

Protection Rating: IP65 (Ingress Protection rating for outdoor use)

Cabinet Design: Customizable cabinet design for branding or signage

Installation Method: Wall-mounted or freestanding or Pole

**Control and Operation:**

Control System: Video controller and processor included

Control Methods: Supports multiple control methods (Wi-Fi, LAN, remote control)

Operating Voltage: 110V AC or 220V AC

Power Consumption: Power optimized

**Additional Features:**

Content Management: Integration with content management systems for flexible display content

Brightness Control: Adjustable brightness for different lighting conditions

Remote Monitoring: Support for remote monitoring and diagnostics

**Mounting and Installation:**

Mounting Options: Wall-mounted or freestanding or Pole installation

Base Plate: Included for freestanding installation

Anchors: Anchors and mounting hardware provided

Installation Manual: Detailed installation manual included

**Warranty:**

Warranty Period: 1 year

**Minimum specifications/requirements for 12x10 Feet P1.9 4K Resolution Cinema SMD Screen with 4k Video Processor**

**Display Specifications:**

Type: Indoor SMD LED Cinema Screen

Pixel Pitch: P1.9

Screen Size: 12x10 feet

LED Type: SMD (Surface-Mount Device) LED

**Video Processor System:**

Processor Type: 4k Video Processor Unit/system

Video Inputs: As per standard (Preferred: 11 x HDMI, 4 x DVI, 1 x SDI)

Scaling and Calibration: Supports scaling and calibration for various video sources

Color Processing: High-quality color processing for accurate and vibrant displays

Video Formats: Supports various video formats and resolutions, including 4K UHD

**Construction and Build:**

Material: High-quality aluminum construction

Cabinet Design: Customizable cabinet design for cinema aesthetics

Installation Method: Wall-mounted or ceiling-mounted

Aspect Ratio: 16:9 standard aspect ratio

**Environmental and Operating Conditions:**

Operating Environment: Indoor use, suitable for controlled environments

**Control and Operation:**

Control System: Integrated control system for display management

Control Methods: Supports various control methods (Wi-Fi, LAN, remote control)

Operating Voltage: 110V AC or 220V AC

Power Consumption: Power optimized

**Additional Features:**

Content Management: Integration with content management systems for flexible display content

Brightness Control: Adjustable brightness for different lighting conditions

Pixel-Level Calibration: Supports pixel-level calibration for precise image quality

**Warranty:**

Warranty Period: 1 year

**Item 5: IP Phones**

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>IP Phones</b>				
1	Business HD IP Phone with POE	12		

**MINIMUM SPECIFICATION/ REQUIREMENTS FOR IP PHONES**

Product: IP Phone

Product Description: A hardware device designed for Voice over IP (VoIP) communication. It provides a user-friendly interface for making and receiving calls over IP networks.

**Key Features:**

VoIP Communication: Enables voice communication over IP networks.

High-Quality Audio: Delivers clear and high-quality audio during calls.

HD Display: Equipped with a display for call information.

Multi-Line Support: Supports multiple phone lines for different extensions.

Power over Ethernet (PoE): Can be powered through Ethernet connections.

Call Management: Features call hold, transfer, conferencing, and forwarding.

Voicemail: Allows users to receive and manage voicemail messages.

Contact Directory: Stores and displays contact information.

Speakerphone: Includes a built-in speakerphone for hands-free calling.

Headset Compatibility: Supports headsets for convenience.

Network Ports: Equipped with Ethernet ports for network connectivity.

Security: Implements security features to protect calls and data.

Easy Configuration: User-friendly interface for setup and customization.

Compatibility: Compatible with various IP PBX (Soft IP PBX) systems and SIP servers.

Durable Design: Designed for long-term and heavy usage.

Support: 1 year warranty.

**Item 6: Datacenter (Virtualization), Networking and IT Equipment along with Accessories**

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications	Qty
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			(to be filled by bidder)	
<b>Datacenter (Virtualization), Networking and IT Equipment along with Accessories</b>				
1	Dedicated 10 Mbps Fiber-optic CIR Internet Service with Symmetrical Bandwidth	01		
2	Wireless Access Point with Wi-Fi 6 (802.11ax), and Dual-Band Support	04		
3	NGFW (Next Generation Firewall) with High performance and advanced threat protection	01		
4	Managed Gigabit Ethernet Switch with 24 Ports (PoE+) or Managed Gigabit Ethernet Switch with 12 Ports (distributed) (PoE+)	10		
5	2U Rack Mounted High Performance Application Server	01		
6	24U Server Rack with Lockable Glass Front Door (With accessories)	01		
7	2U Line Interactive UPS with Up to 1000 VA/Watts Power Capacity, Configurable Voltage, Hot-Swappable Batteries	01		
8	Radio wireless P2P access points	10		
9	4U switch Rack	05		
10	CAT6 UTP Ethernet Solid Copper Conductor Cable	L.S		
11	Network Accessories: Patch Panels, Cable Management, Patch Cables (Ethernet, Fiber Optic), Power Distribution Units (PDUs), Fiber Optic Enclosures, Cable Labels, Cooling Solutions, Network Racks and Shelves, Cable Ties, Grounding and Bonding Equipment, Label Printers.	L.S		
12	Type 1 Hypervisor with OS Support, Clustering, Security, Backup, and Cloud connectivity	01		



## **Minimum System Requirement**

### **Project Scope:** Data Center and IT Infrastructure Setup with Hypervisor and Control Room

The project involves the establishment of a data center, IT infrastructure, hypervisor platform, and a control room for efficient management, monitoring, and maintenance of IT resources.

#### **Data Center Setup:**

- Design and construction of a secure and controlled environment for housing critical IT infrastructure.
- Installation of air conditioning system to maintain optimal temperature and humidity levels.
- Implementation of fire detection and suppression systems for enhanced safety.
- Power management solutions, including backup generators and uninterruptible power supplies (UPS), to ensure continuous operation.

#### **IT Infrastructure Implementation:**

- Deployment of hardware components, including servers, storage systems, and networking equipment.
- Configuration of redundant network connections for high availability and load balancing.
- Storage area network (SAN) setup for centralized and efficient data storage.
- Installation of backup and disaster recovery systems to safeguard data integrity.

#### **Virtualization Platform (Type-1 Hypervisor):**

- Installation and configuration of a virtualization hypervisor platform.
- Creation of virtual machines (VMs) for efficient resource utilization.
- Implementation of dynamic resource allocation to optimize performance.
- Integration of backup and snapshot solutions for VM protection.

#### **Control Room Setup:**

- Design and construction of a dedicated control room for IT infrastructure management.
- Installation of monitoring stations, control panels, and alerting systems.
- Provision of ergonomic workstations and comfortable seating for IT personnel.
- The control room will also serve as a centralized communications & control hub

#### **IT Management and Monitoring:**

- Deployment of comprehensive IT management software and tools for real-time monitoring and control.
- Implementation of centralized control for all data center resources.
- Integration with security systems and access controls for authorized personnel.

#### **Security and Access Control:**

- Implementation of multi-layer security measures, including biometric access controls and surveillance systems.
- Restricting physical access to authorized personnel only.
- Data encryption and security protocols to safeguard sensitive information.

#### **Disaster Recovery and Redundancy:**

- Establishing disaster recovery and redundancy solutions to ensure minimal downtime.
- Regular data backups and off-site storage for data protection.
- Failover mechanisms for critical systems in case of hardware failures.

#### **Connectivity and Networking:**

- High-speed, redundant internet connectivity for data center operations.
- Implementation of a secure and efficient network infrastructure.
- Integration with external networks and remote access solutions.

**Scalability and Growth:**

- Provision for scalability to accommodate future expansion and growth.
- Adherence to industry standards and best practices to support changing IT requirements.

**Documentation and Training:**

- Comprehensive documentation of the data center and IT infrastructure setup.
- Training and resources for IT personnel to ensure efficient operation and maintenance.

**Regulatory Compliance:**

Ensuring compliance with data protection and security regulations (e.g., GDPR, HIPAA, etc.), if applicable.

The project aims to provide a secure, efficient, and scalable IT environment that supports critical business operations. The data center and IT infrastructure setup, combined with advanced monitoring and control capabilities, will enhance the organization's ability to manage resources, optimize performance, and respond to unforeseen events effectively.

**MINIMUM SPECIFICATIONS FOR DEDICATED 10 MBPS FIBER-OPTIC CIR INTERNET SERVICE WITH SYMMETRICAL BANDWIDTH****General Specifications:**

Service Type: Dedicated Internet Connection with CIR

CIR Speed: 10 Mbps (Committed Information Rate)

Access Type: Fiber-optic or Radio depending upon the site access.

**Service Features:**

Symmetrical Bandwidth: Equal upload and download speeds for efficient data transfer

Low Latency: Minimized delays for real-time applications

Unlimited Data: No data usage caps or overage charges

VoIP Support: Integrated VoIP service for clear and reliable voice calls

Content Delivery Network (CDN) Support: Improved performance for online streaming and gaming

**Network Infrastructure:**

Technology: Utilizes advanced fiber-optic technology

Network Redundancy: Redundant paths for improved reliability

Network Security: State-of-the-art security measures to protect your data

**Equipment:**

CPE (Customer Premises Equipment): Provided and installed by ISP for optimal performance

Router: High-performance router for reliable connectivity

Firewall: Enhanced security options to protect your network

**Service Level Agreement (SLA):**

Uptime Guarantee: 99.9% uptime guarantee

Performance: Guaranteed 10 Mbps CIR, regardless of network congestion

Response Time: Average response time of 15 minutes for technical support and issue resolution

**Installation and Setup:**

Installation: Professional installation by ISP technicians

Equipment Setup: Configuration and optimization of CPE for optimal performance

**Support:**

24/7 Technical Support: Access to round-the-clock technical assistance

Dedicated Account Manager: Assigned representative for personalized support

**Billing and Contracts:**

Billing Type: Yearly (for 1-year billing will be responsibility of selected vendor)

Contract Length: Flexible contract terms with options for short and long durations

**MINIMUM WIRELESS ACCESS POINT WITH WI-FI 6 (802.11AX), AND DUAL-BAND SUPPORT**

**General Specifications:**

Type: Wireless Access Point

Housing: Durable and aesthetically pleasing design

**Wireless Connectivity:**

Wireless Standards: IEEE 802.11a/b/g/n/ac/ax (Wi-Fi 6)

Dual-Band Support: 2.4GHz and 5GHz frequency bands

MIMO Technology: multiple streams for improved throughput.

**Network Features:**

Maximum Data Rate: Up to 1.3 Gbps

Coverage Area: 120 square meters (approximate)

WPA/WPA2/WPA3: Enhanced security protocols for secure connections

**Ports and Interfaces:**

Power over Ethernet (PoE): Supports PoE for simplified installation

**Management and Configuration:**

Management Interface: Web-based GUI for easy configuration

Centralized Management: Compatible with network management systems

Firmware Updates: Supports over-the-air firmware updates

**Advanced Features:**

Mesh Networking: Support for mesh networking for extended coverage

Guest Network: Configurable guest network for secure separation

Quality of Service (QoS): Prioritizes traffic for enhanced performance

VLAN Support: Supports VLAN tagging for network segmentation

**Security:**

Encryption: WEP, WPA, WPA2, WPA3 encryption standards

MAC Filtering: Granular control with MAC address filtering

RADIUS Server Support: Authentication and security integration

**Environmental Conditions:**

Operating Temperature: -30 to 70 °C (as per the local weather conditions)

**MINIMUM SPECIFICATIONS NGFW (NEXT GENERATION FIREWALL) WITH HIGH PERFORMANCE AND ADVANCED THREAT PROTECTION**

**General Specifications:**

Form Factor: Desktop, compact design

**Firewall Performance:**

Firewall Throughput: Up to 5 Gbps

NGFW Throughput: Up to 4 Gbps (including Application Control and IPS)

Threat Protection Throughput: Up to 3 Gbps (including AntiVirus and Web Filtering)

IPSec VPN Throughput: Up to 2 Gbps

**Security Features:**

Fabric for centralised management and advanced threat visibility.

Firewall: Stateful packet inspection, application control, and intrusion prevention.

IPsec and SSL VPN: Secure remote access and site-to-site VPN connectivity.

Web Filtering: URL filtering and content control.

AntiVirus: Real-time threat detection and prevention.  
Application Control: Granular application-level access control.  
SD-WAN: Dynamic path selection and application steering.  
Sandboxing: Advanced threat detection through integration with FortiSandbox.  
Network Segmentation: Virtual LAN (VLAN) support for network segmentation.

**Networking:**

WAN Ports: Required  
LAN Ports: Required  
USB Ports: Required

**Management:**

Management Interfaces: Web-based GUI, CLI  
Centralized Management: centralized management and reporting.

**High Availability:**

Active-Passive Clustering: Supports high availability with active-passive clustering for redundancy.

**MINIMUM SPECIFICATIONS FOR Managed Gigabit Ethernet Switch with 24 Ports (PoE+) or Managed Gigabit Ethernet Switch with 12 Ports (distributed) (PoE+)**

**General Specifications:**

Type: Managed Gigabit Ethernet Switch  
Form Factor: Rack-mountable

**Ethernet Ports:**

Total Ports: 12 or 24 Gigabit Ethernet Ports as per the proposed solution  
PoE Support: 24 ports with PoE+ up to 30W per port  
SFP Ports: 2 SFP (Small Form-Factor Pluggable) ports for fiber uplinks

**Layer 3 Routing:**

Routing Features: Static routing and dynamic routing protocols (OSPF, BGP, etc.) support for inter-VLAN routing and network segmentation.

**Switching Performance:**

Switching Capacity: Up to 80 Gbps  
Forwarding Rate: Up to 16.8 million packets per second (Mpps)

**Quality of Service (QoS):**

QoS Support: Prioritization and traffic shaping for optimized network performance  
Voice and Video Support: QoS settings for voice and video applications

**VLAN Support:**

VLANs: Supports 4,096 VLANs for network segmentation  
VLAN Tagging: 802.1Q VLAN tagging for virtual LAN isolation

**Management:**

Management Interfaces: Web-based GUI, CLI (Command Line Interface)  
Centralized Management: centralized management, monitoring, and configuration

**Security:**

Access Control Lists (ACLs): Granular access control based on MAC addresses, IP addresses, and port numbers  
Port Security: Protection against unauthorized devices using MAC address locking

**Redundancy and Resilience:**

Link Aggregation: Support for link aggregation (LACP) for increased bandwidth and redundancy  
STP/RSTP: Spanning Tree Protocol (STP) and Rapid Spanning Tree Protocol (RSTP) support for loop prevention

**Note:** 12 numbers of Ethernet switches of 12 ports each (of same specs) are also accepted in case of distributed networking.

### **MINIMUM SPECIFICATIONS 2U RACK MOUNTED HIGH PERFORMANCE APPLICATION SERVER**

#### **General Specifications:**

Form Factor: 2U Rack Server

Processor Support: Dual Intel Xeon Scalable Processors

#### **Processor Options:**

Processor Types: Intel Xeon Gold

Core Count: Configurable with up to 24 cores based on processor selection

#### **Memory:**

Memory Type: DDR4 Registered DIMMs

Minimum Memory: 32 GB (configurable/expandable based on processor and memory configuration)

#### **Storage:**

Drive Bays: 8 2.5" or 3.5" hot-plug drive bays

Storage capacity: 8TB

Storage Options: Support for SAS, SATA, NVMe, or mixed drive types

RAID Support: Integrated RAID controllers or optional PERC RAID controllers

#### **Networking:**

Network Adapters: Dual integrated 1GbE or 10GbE network adapters

Optional Network Expansion: Additional PCIe network adapters for increased connectivity

#### **PCIe Expansion:**

PCIe Slots: 12 PCIe 3.0 or 4.0 expansion slots for additional cards

#### **Management:**

Management Interfaces: iDRAC9 with Lifecycle Controller for remote management

Management Software: OpenManage software suite for centralised server management

#### **Power Supplies:**

Power Supply Options: Single or dual redundant power supplies for availability

Power Efficiency: Support for high-efficiency power supplies

#### **Operating System Support:**

Operating Systems: Compatible with various Windows, Linux, and virtualization platforms

#### **Security:**

Security Features: TPM 2.0, Secure Boot, System Lockdown

#### **Certifications:**

Regulatory Compliance: Meets relevant safety and electromagnetic compatibility standards

### **MINIMUM SPECIFICATIONS 24U SERVER RACK WITH LOCKABLE GLASS FRONT DOOR (WITH ACCESSORIES)**

Rack Height: 24U (1U = 1.75 inches)

Material: Cold-rolled steel construction for durability

#### **Front and Rear Access:**

Front Door: Lockable tempered glass door for security and visibility

Rear Door: Lockable perforated metal door for airflow and cable access

#### **Mounting Rails:**

Adjustable Rails: Vertical mounting rails with adjustable depth for flexible equipment installation

Rail Type: Square hole rails compatible with various equipment types

**Ventilation:**

Cooling Fans: Multiple cooling fans for improved airflow and temperature management

Hot-Swap Fans: Fans that can be easily replaced without powering down the rack

**Cable Management:**

Cable Channels: Vertical and horizontal cable management channels for organized cable routing

Cable Tiedown Points: Multiple cable tiedown points for securing cables

**Accessories Included:**

Power Distribution Unit (PDU): Provides power distribution to rack-mounted equipment

Caster Wheels: Lockable caster wheels for easy mobility and positioning

Shelf(s): Sliding or fixed shelves for non-rackmount equipment or accessories

Blanking Panels: Used to fill empty rack spaces and improve airflow

Tool-less Mounting Hardware: Included for easy equipment installation

**Optional Accessories:**

Keyboard Tray: Pull-out keyboard and mouse tray for convenient management

Rack-Mountable UPS: Uninterruptible Power Supply for power backup

Rack-Mountable KVM Switch: Keyboard, Video, and Mouse switch for multiple server management

Additional Shelves: For increased storage or non-rackmount equipment

**Certifications:**

Standard for data center reliability

**MINIMUM SPECIFICATIONS FOR 2U LINE INTERACTIVE UPS WITH UP TO 1000 VA/WATTS POWER CAPACITY, CONFIGURABLE VOLTAGE, HOT-SWAPPABLE BATTERIES**

Rack Height: 2U (1U = 1.75 inches)

Topology: Line Interactive

Power Capacity: Up to 1000 VA/Watts

Output Voltage: Configurable based on input voltage and load requirements

**Battery Backup:**

Battery Type: Sealed Lead-Acid batteries

Battery Runtime: Configurable based on load and battery capacity

**Input/Output:**

Input Voltage: Configurable for various input voltage ranges (e.g., 120V, 230V)

Output Voltage: Configurable for various output voltage ranges

Output Waveform: Modified Sine Wave

**Management and Connectivity:**

Management Interface: LCD Display, LED Indicators, or Web-based GUI

Communication Ports: USB, Serial, Ethernet, SNMP for remote management

Software: Compatible with power management software for monitoring and control

**Protection Features:**

Voltage Regulation: Automatic voltage regulation (AVR) for voltage stabilization

Surge Protection: Built-in surge protection for connected devices

Load Segmentation: Ability to prioritize critical loads during power loss

**Audible and Visual Indicators:**

Audible Alarms: Audible alarms for various UPS conditions

LED Indicators: LED status indicators for power, battery, and fault alerts

**Environmental Conditions:**

Operating Temperature: as per local weather conditions

Humidity: 5 to 95% (non-condensing)

**MINIMUM SPECIFICATIONS FOR RADIO WIRELESS ACCESS POINTS (P2P)****General Specifications:**

Type: Radio Wireless Access Point (P2P)

Housing: Durable and aesthetically pleasing design

Pole mounted and accessories

**Wireless Connectivity:**

WiFi standards: 802.11ad/ay, 802.11ac (WiFi 5).

**Network Features:**

Maximum Data Rate: Up to 866 Mbps

Coverage Area: 500 meters (approximate)

WPA/WPA2/WPA3: Enhanced security protocols for secure connections

**Ports and Interfaces:**

Power over Ethernet (PoE)+: Supports PoE+ for simplified installation

**Management and Configuration:**

Management Interface: Web-based GUI for easy configuration

Centralized Management: Compatible with network management systems

Firmware Updates: Supports over-the-air firmware updates

**Advanced Features:**

Mesh Networking: Support for mesh networking for extended coverage

Guest Network: Configurable guest network for secure separation

Quality of Service (QoS): Prioritizes traffic for enhanced performance

VLAN Support: Supports VLAN tagging for network segmentation

**Security:**

Encryption: WEP, WPA, WPA2, WPA3 encryption standards

MAC Filtering: Granular control with MAC address filtering

RADIUS Server Support: Authentication and security integration

**Environmental Conditions:**

Operating Temperature: Outdoor use (as per the local weather conditions)

**MINIMUM SPECIFICATIONS 4U SWITCH RACK**

Rack Height: 4U (1U = 1.75 inches)

Material: Cold-rolled steel construction for durability with lockable glass front door (with accessories)

**Front and Rear Access:**

Front Door: Lockable tempered glass door for security and visibility

Rear Door: Lockable perforated metal door for airflow and cable access

**Mounting Rails:**

Adjustable Rails: Vertical mounting rails with adjustable depth for flexible equipment installation

Rail Type: Square hole rails compatible with various equipment types

**Ventilation:**

Cooling Fans: Multiple cooling fans for improved airflow and temperature management

Hot-Swap Fans: Fans that can be easily replaced without powering down the rack

**Cable Management:**

Cable Channels: Vertical and horizontal cable management channels for organized cable routing

Cable Tiedown Points: Multiple cable tiedown points for securing cables

**Accessories Included:**

Power Distribution Unit (PDU): Provides power distribution to rack-mounted equipment

Caster Wheels: Lockable caster wheels for easy mobility and positioning

Shelf(s): Sliding or fixed shelves for non-rackmount equipment or accessories

Blanking Panels: Used to fill empty rack spaces and improve airflow

Tool-less Mounting Hardware: Included for easy equipment installation

**Optional Accessories:**

Keyboard Tray: Pull-out keyboard and mouse tray for convenient management

Rack-Mountable UPS: Uninterruptible Power Supply for power backup

Rack-Mountable KVM Switch: Keyboard, Video, and Mouse switch for multiple server management

Additional Shelves: For increased storage or non-rackmount equipment

**Certifications:**

Standard for data center reliability

**MINIMUM SPECIFICATIONS FOR CAT6 UTP ETHERNET SOLID COPPER CONDUCTOR CABLE**

**Cable Type:**

Cable Category: CAT6 (Category 6)

Cable Type: Unshielded Twisted Pair (UTP)

**Physical Characteristics:**

Cable Length: as per available standard roll in market

Cable Color: Varies (usually blue or gray, but other colors may be available)

Conductor Type: Solid copper conductors

Twisted Pairs: 4 twisted pairs (8 conductors in total)

Insulation: PVC (Polyvinyl Chloride) insulation for each conductor

**Performance Specifications:**

Data Rate: Supports up to 1 Gbps (Gigabit per second) data rates

Frequency: Designed to work up to 250 MHz

Transmission Distance: Reliable transmission up to 100 meters (328 feet)

**Applications:**

Networking: Ideal for structured cabling in office, data center, and home network installations

Data Transmission: Supports high-speed data, voice, and video transmission

**MINIMUM SPECIFICATIONS FOR NETWORK ACCESSORIES**

**Patch Panels:**

Port Density: Various port counts (e.g., 24, 48, 96 ports)

Compatibility: Cat5e, Cat6, Cat6a, Cat7, fiber optic panels

Termination: Keystone jacks or pre-terminated cables

Rack Mountable: Fits standard 19-inch racks

**Cable Management:**

Cable Organizers: Vertical and horizontal cable managers



Cable Rings: Rings for cable routing and separation  
Brush Strips: Cable pass-through with brush strips for airflow

**Patch Cables:**

Cable Types: Ethernet (Cat5e, Cat6, Cat6a, Cat7), Fiber optic (single-mode, multi-mode)  
Lengths: Various lengths (e.g., 1ft, 3ft, 6ft, etc.)  
Connectors: RJ45, LC, SC, ST, MTP/MPO

**Power Distribution Units (PDUs):**

Types: Basic, Metered, Monitored, Switched PDUs  
Outlets: Different outlet counts and types (C13, C19)  
Power Ratings: Various power ratings (e.g., 15A, 20A, etc.)  
Monitoring: Remote monitoring and management options

**Fiber Optic Enclosures:**

Rack Mountable: Fits standard 19-inch racks  
Fiber Capacity: Configurable for different fiber counts  
Adapter Types: LC, SC, MTP/MPO adapters

**Cable Labels and Markers:**

Labels: Self-laminating, heat shrink labels for cable identification  
Markers: Color-coded markers for cable grouping

**Cooling Solutions:**

Rack Cooling: Rack-mounted cooling units or fans  
In-Rack Cooling: In-row or in-rack cooling solutions  
Hot/Cold Aisle Containment: Solutions for optimizing airflow

**Network Racks and Shelves:**

Depth: Various depths for equipment placement  
Load Capacity: Support for heavy equipment

**Cable Ties and Velcro Straps:**

Cable Ties: Nylon or Velcro cable ties for cable management  
Velcro Straps: Reusable straps for bundling cables

**Grounding and Bonding:**

Grounding Bars: Copper grounding bars for proper grounding  
Bonding Clamps: Clamps for bonding equipment

**Label Printers:**

Types: Handheld or desktop label printers  
Label Types: Self-laminating, heat shrink, adhesive labels

**MINIMUM SPECIFICATIONS FOR TYPE 1 HYPERVISOR WITH OS SUPPORT, CLUSTERING, SECURITY, BACKUP, AND CLOUD CONNECTIVITY**

Hypervisor Types: Type 1 (Bare Metal)

Supported Guest OS: Debian, Ubuntu, CentOS, Fedora, FreeBSD, OpenSUSE, Windows Server, etc.

Performance: Low overhead and can be used to run a variety of virtual machines with good performance.

**Server Hardware:**

Processor: Support for virtualization extensions (e.g., Intel VT-x, AMD-V)

Memory: at least 32 GB RAM to allocate to VMs

Storage: at least 8TB storage capacity and performance (SAS recommended)

Network: Gigabit or higher network interfaces for VM communication

**Resource Allocation and Management:**

Resource Pools: Grouping VMs for resource allocation

<p>Dynamic Resource Allocation: Ability to allocate resources based on demand</p> <p>Over commitment: Managing more virtual resources than physical resources</p> <p><b>High Availability and Fault Tolerance:</b></p> <p>Clustering: Clustering for VM failover and availability</p> <p>Live Migration: Ability to migrate running VMs between hosts</p> <p>Fault Tolerance: Redundancy to ensure uninterrupted operation</p> <p><b>Management and Monitoring:</b></p> <p>Management Console: Web-based interface for VM management</p> <p>Centralized Management: Management of multiple hosts from a single console</p> <p>Monitoring: Monitoring VM performance, resource usage, and health</p> <p><b>Networking:</b></p> <p>Virtual Switches: Creation of virtual switches for VM networking</p> <p>Network Segmentation: VLANs, subnets, and network isolation for VMs</p> <p><b>Security:</b></p> <p>Isolation: Isolating VMs from each other</p> <p>Security Policies: Applying security policies to VMs</p> <p>Virtual Firewall: Virtual firewall for network security</p> <p><b>Backup and Recovery:</b></p> <p>Snapshot: Taking and managing VM snapshots for backup and recovery</p> <p>Backup Solutions: Integration with backup solutions for VM protection</p> <p><b>Integration with Cloud and DevOps:</b></p> <p>Cloud Integration: Integration with public or private cloud environments</p> <p>APIs: APIs for automation and integration with DevOps tools</p> <p><b>Performance Monitoring and Optimization:</b></p> <p>Performance Analysis: Monitoring VM performance and identifying bottlenecks</p> <p>Resource Optimization: Tools to optimize resource utilization</p> <p><b>Note:</b> The Type-1 hypervisor will be provided along with the Cluster management solution.</p>
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**Item 7: E-Ticketing and Queue Management Technology Solution and Software Applications**

E-Ticketing and Queue Management Technology Solution and Software Applications				
SR. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
1	Self-hosted/cloud-based Enterprise Ticketing Software, Linux/Windows OS-compatible, and API integration	01		
2	Unified communications (UC) PBX system with Voice calling, conference call, CRM integration, and mobility access	01		
3	AI based people counting system with realtime object detection, age/gender classification, reporting, and IP Camera Integration	01		

4	Comprehensive Fleet Management System with real-time tracking, security, analytics, and scalability for efficient management of up to 12 Electric Vehicles.	01		
5	IP Camera Network Video Recording (NVR) Software used for web/live streaming of animal live feed and connectivity with the website and mobile app.	01		
6	High-Performance Load Balancer: Linux-based, supports various algorithms, session persistence, SSL termination, security features, scalability, monitoring, and failover	01		
7	Advanced IT and Network Monitoring Solution upto 100 nodes with real-time availability and performance monitoring, alerting, cross-platform compatibility, customizable configurations, integrations, and security features	01		
8	Network Video Recorder (NVR) Solution, with multi-camera support, advanced video compression, AI integration, scalable storage, RAID support, smart search, remote access, analytics, security, scalability,	01		
9	Enterprise Backup Solution with versatile data support, multiple backup types, snapshot integration, application-awareness, encryption, on-premises and hosted deployment options, SAN-based storage, centralized management, disaster recovery, multi-platform compatibility, security features, scalability, and backup validation	01		
10	Advanced Data Analytics Solution: Data integration, cleansing, modeling, dashboarding, AI-powered people counting, and e-Ticketing system integration, business unit monitoring, database integration, security, integration capabilities, AI-driven insights, scalability	01		

## **Minimum System Requirement**

### **Project Scope:** Lahore Safari Parking and Visitor Ticketing System

The Lahore Safari Parking and Visitor Ticketing System will encompass the design, development, and implementation of an E-Ticketing solution for efficient management of the Lahore Safari visitor experience, including parking facilities and ticketing operations.

### **System Deployment:**

The system will be self-hosted to ensure data security and quick response times. It will be compatible with various platforms, including Windows, Linux, macOS, and Android. Server requirements will be met to host the application and database efficiently.

### **Database Management:**

The SQL-based database will be structured for managing data related to visitor ticketing, parking, and related operations.

### **User Interface:**

The user interface will include role-based access control for different user categories, such as administrators, cashiers, and managers.

It will feature a user-friendly and intuitive design that is responsive across various devices, including desktops, tablets, and mobile phones.

## **Functionality:**

### **Visitor Ticketing:**

Creation, processing, and management of visitor ticket sales transactions.

A product catalog to manage various types of tickets, pricing, and attributes.

Customer management to store visitor information and purchase history.

Integration with multiple payment gateways for a convenient payment process.

Reporting and analytics tools for generating sales reports and insights.

### **Parking Management:**

Inventory management for parking spots, monitoring availability, and issuing alerts for full parking lots.

Order fulfillment, which includes managing parking reservations and tracking entry and exit.

### **Promotions and Discounts:**

Capability to apply discounts, promotions, and special offers.

### **Business Intelligence:**

Tools for gathering insights into visitor behavior and business performance, enabling data-driven decisions.

### **Integration:**

APIs will be provided for third-party integrations, such as accounting and CRM systems.

Hardware integration with receipt printers, barcode scanners, and more for efficient operations.

Payment gateways will be integrated to offer a variety of payment options for visitors.

### **Security:**

Sensitive data, including visitor information and transactions, will be encrypted.

Secure user authentication and login mechanisms will be implemented.

Audit trails will monitor and track user actions to ensure accountability.

Automated database backups will be scheduled for data protection.

### **Scalability:**

The system will be designed to handle high transaction volumes effectively.

Support for load balancing and scaling out to accommodate growing visitor numbers.

### **Localization:**

The system will support localization for various languages and currency conversions.

**Support and Maintenance:**

Comprehensive documentation will be provided for users and administrators.

Technical support options will be available, including support plans, forums, and helpdesk assistance.

**Performance Requirements:**

The system will aim to achieve minimal response times for user actions.

Efficient database performance will be maintained to enable quick data retrieval.

This project aims to provide Lahore Safari with an advanced E-Ticketing system that enhances visitor experiences, ensures data security, offers convenience through multiple payment options, and empowers the management with valuable insights for continuous improvements. The system will help streamline parking operations and provide visitors with a seamless ticketing process while adhering to relevant standards and regulations.

**MINIMUM SPECIFICATIONS FOR SELF-HOSTED/CLOUD-BASED ENTERPRISE TICKETING SOFTWARE, LINUX/WINDOWS OS-COMPATIBLE, AND API INTEGRATION**

Application Type: Enterprise Point of Sale (POS) Software

Deployment: Self-hosted, installed on the client's infrastructure or cloud-based

**Platform:**

Operating System: Compatible with Windows, Linux, macOS, and Android

Server Requirements: Suitable for hosting the application and database

Database Engine: SQL-based (e.g., MySQL, PostgreSQL, SQL Server, etc.)

Database Design: Efficiently structured for POS data (sales, products, customers)

**User Interface:**

User Access: Role-based access control (admin, cashier, manager, etc.)

Graphical User Interface: User-friendly and intuitive design

Responsive Design: Suitable for various screen sizes (desktop, tablet, mobile)

**Functionality:**

Sales Management: Creating, processing, and managing sales transactions

Product Catalog: Managing product inventory, pricing, and attributes

Customer Management: Storing and managing customer information

Payment Processing: Integration with various payment gateways and methods

Reporting and Analytics: Generating sales reports, analytics, and insights

Inventory Management: Monitoring and tracking stock levels, alerts, and restocking

Order Fulfillment: Managing orders, shipments, and delivery tracking

Promotions and Discounts: Applying discounts, promotions, and special offers

Multi-channel Sales: Managing sales across multiple channels (e.g., online, in-store, mobile)

Business Intelligence: Gaining insights into business performance

**Integration:**

APIs: Providing APIs for third-party integrations (e.g., accounting, CRM)

Hardware Integration: Integration with receipt printers, barcode scanners, etc.

Payment Gateways: Integration with popular payment gateways for payment processing

**Security:**

Data Encryption: Encryption of sensitive data (customer info, transactions)

Authentication: User authentication and secure login mechanisms

Audit Trails: Tracking user actions for auditing and accountability

Data Backup: Regular automated backups of the database

**Scalability:**

Performance: Designed to handle high transaction volumes

Load Balancing: Support for load balancing and scaling out

**Localization:**

Language Support: Localization for various languages and regions

Currency: Support for local currency and currency conversions

**Support and Maintenance:**

Documentation: Comprehensive user and administrator documentation

Technical Support: Offering support plans, forums, or helpdesk

**Performance Requirements:**

Response Time: Minimal response time for user actions

Database Performance: Efficient queries for quick data retrieval

**MINIMUM SPECIFICATIONS/REQUIREMENTS FOR UNIFIED COMMUNICATION (UC) PBX SYSTEM WITH VOICE CALLING, CONFERENCES, CALL, CRM INTEGRATION AND MOBILITY ACCESS.**

**Project Overview:**

- The IP-PBX (Internet Protocol - Private Branch Exchange) implementation project aims to establish an advanced and scalable telecommunication system for Lahore Safari. This system will enable efficient internal and external communication, ensuring seamless coordination and connectivity across the Safari facility.

**System Deployment:**

- The IP-PBX system will be deployed on-premises within Lahore Safari's infrastructure.
- The platform will be highly compatible with existing hardware and network infrastructure.

**Telephony Infrastructure:**

- The system will support a designated number of extensions and lines to accommodate internal and external communication requirements.
- Compatibility with both analog and IP-based telephony hardware for versatility.

**Call Routing and Management:**

- Efficient call routing features, including call forwarding, call transfer, and automated call distribution (ACD).
- Integration with interactive voice response (IVR) systems for streamlined caller experiences.

**Unified Communication:**

- Integration with email and messaging platforms for unified communication.
- Voicemail and voicemail-to-email functionality for efficient message management.

**Security:**

- Implementation of robust security measures, including secure voice communication (VoIP encryption).
- User authentication and access controls to protect the system from unauthorized access.

**Scalability:**

- The system will be designed to accommodate future growth and additional extensions, lines, and features as needed.

**Redundancy and Failover:**

- High availability and redundancy features to ensure uninterrupted communication.
- Failover capabilities to automatically switch to backup systems in case of disruptions.

#### Integration:

- Integration with the existing ticketing and visitor management system for seamless communication with Safari staff.
- Compatibility with the AI-based footfall counting mechanism for real-time reporting and alerts.

Maintenance and Support: - Ongoing maintenance and technical support services to ensure system health and performance for the period of 1 year.

Documentation: Comprehensive documentation to assist administrators in system management and troubleshooting.

The IP-PBX implementation for Lahore Safari will significantly enhance communication and coordination among staff, contributing to improved visitor experiences and overall operational efficiency. The system will provide secure and scalable telephony solutions and seamless integration with existing Safari management systems, reinforcing Lahore Safari's commitment to excellence.

#### Key Features:

- VoIP Communication: Enables voice communication over the Internet or internal networks.
- Call Routing: Routes calls to the appropriate extensions or departments.
- Voicemail: Allows users to receive and manage voicemail messages.
- Conference Calls: Supports multi-party conference calls.
- Auto-Attendant: Provides an automated phone menu for callers to direct their calls.
- Call Recording: Records and stores calls for quality assurance and compliance.
- Call Forwarding: Forwards calls to other extensions or external numbers.
- Interactive Voice Response (IVR): Enables customized automated responses.
- Integration: Integrates with IP phones and other communication systems.
- Reporting: Generates call logs and reports for analysis.
- Compatibility: Compatible with various IP phone models and SIP devices.
- Easy Configuration: User-friendly web-based configuration interface.
- Technical Support: Access to technical support and updates.

**Note:** The system should be VM supported, the complete working solution will be deployed on site.

### **MINIMUM SPECIFICATIONS FOR AI BASED PEOPLE COUNTING SYSTEM WITH REALTIME OBJECT DETECTION, AGE/GENDER CLASSIFICATION, REPORTING, AND IP CAMERA INTEGRATION**

Application Type: People Counting and Classification System for a Zoo Entrance

Deployment: Installed on a dedicated server or cloud infrastructure

#### **Platform:**

Operating System: Linux-based (Ubuntu, CentOS) for compatibility with AI frameworks

Hardware: High-performance GPU for real-time image processing

#### **Technologies and Libraries:**

AI framework for object detection and classification

Computer vision library for image processing

Real-time object detection algorithm with state-of-the-art accuracy

Database for data storage

**System Architecture:**

Frontend: User-friendly web-based interface for system control and visualization

Backend: Application logic and AI models

Database Server: For storing visitor data, classifications, and statistics

**Object Detection and Classification:**

Algorithm for real-time object detection with accuracy of up to 95%

Training Data: Custom dataset for training the object detection model to detect people

Age and Gender Classification: AI model for age and gender classification with accuracy of up to 90%

Preprocessing: Image preprocessing to enhance detection accuracy

**Data Flow:**

Image Input: Capturing images from cameras at the zoo entrance

Object Detection: Using the object detection algorithm to detect people in the images

Age and Gender Classification: The AI model classifies people by age and gender

Data Storage: Storing detection, classification, and timestamp data in the database

Reporting: Generating reports and visualizations based on collected data

**Database Schema:**

Visitors Table: Storing visitor data (timestamp, age, gender, etc.)

Statistics Table: Storing daily, weekly, and monthly statistics

**User Interface:**

Dashboard: Visual representation of visitor count, age distribution, and gender breakdown

Settings: Configurable settings for image sources, thresholds, and reporting intervals

**Integration:**

Camera Integration: Integration with cameras at the entrance for real-time image capture

APIs: Providing APIs for third-party integration (e.g., reporting tools, zoo management systems)

**Security:**

Data Encryption: Encryption of sensitive data stored in the database

Authentication: User authentication and secure access controls

**Performance Requirements:**

Real-Time Processing: Real-time processing of images for accurate counting and classification

Scalability: Ability to handle varying visitor volumes

**Deployment and Maintenance:**

Installation: Easy installation process on the server or cloud environment

Updates: Capability for remote updates and patches

Maintenance: Monitoring system health and performance

**Licensing:**

Software License: Commercial or open-source license (depending on the solution)

**Regulatory Compliance:**

Privacy Regulations: Compliance with data protection regulations (e.g., GDPR)

**Testing and Quality Assurance:**

Unit Testing: Ensuring individual components work correctly

Integration Testing: Ensuring components work together seamlessly

Performance Testing: Testing system performance under different loads



## **MINIMUM SPECIFICATIONS/REQUIREMENTS FOR COMPREHENSIVE FLEET MANAGEMENT SYSTEM WITH REAL-TIME TRACKING, SECURITY, ANALYTICS, AND SCALABILITY FOR EFFICIENT MANAGEMENT OF UP TO 12 ELECTRIC VEHICLES.**

### Project Overview:

- The Fully Equipped Fleet Management System (FMS) project aims to develop a comprehensive software application for efficient management and monitoring of a fleet of vehicles. This system will cover various aspects of fleet management, including Electric Vehicle (EV) tracking, driver management, and fleet supervisor control.

### Electric Vehicle (EV) Management:

- Implementation of EV-specific features to support the growing demand for electric and eco-friendly vehicle fleets.
- Monitoring and management of EV battery status, charge levels, range, and energy consumption.
- Integration with EV charging infrastructure to track charging status and location.
- Mileage tracking for EVs and assessing usage patterns and efficiency.

### Driver Management:

- Assigning vehicles to drivers and monitoring driver performance, behavior, and working hours.
- Implementing a driver scoring system for safety and efficiency assessment.
- Real-time monitoring and alerts for harsh driving behavior, such as excessive acceleration, braking, and cornering.

### Fleet Supervisor Control:

- Empowering fleet supervisors with the tools to oversee and manage the entire fleet of vehicles.
- Access to real-time data on vehicle locations, conditions, and driver activities.
- Communication with drivers and the ability to make informed decisions based on system insights.

### Tracking and Telematics:

- GPS tracking for precise location tracking of all fleet vehicles.
- Geofencing capabilities to define custom geographic boundaries and receive alerts on vehicle entry/exit.
- Monitoring of vehicle speed and notification of speed violations.
- Route optimization to suggest and optimize routes for improved efficiency.
- Monitoring of fuel consumption for traditional vehicles.

### Vehicle Health and Maintenance:

- Monitoring of vehicle health, diagnostics, and alerts for maintenance requirements.
- Tracking of vehicle mileage and preventive maintenance scheduling.
- Providing vehicle information to drivers and supervisors for proactive maintenance.

### Security and Anti-Theft:

- Anti-theft features to prevent unauthorized access and enable vehicle immobilization in case of theft.
- Tamper alerts to notify of any unauthorized vehicle tampering or access.
- Support for stolen vehicle recovery through tracking capabilities.

### Data Analytics and Reporting:

- Data visualization through real-time dashboards for a comprehensive overview of the fleet's status.

- Customized reports generation for vehicle and driver performance analysis.
- Access to historical data for trend analysis and decision-making.
- API integration for enabling connections with external systems and software.

User Interface:

- Development of user-friendly web and mobile applications for fleet managers, drivers, and supervisors.
- Intuitive user interfaces to ensure easy navigation and access to vital fleet information.

Scalability and Customization: Scalable architecture to accommodate the growth or changes in the fleet size. Customization options to tailor the system to specific business requirements and branding.

Security and Compliance: Implementation of data encryption for secure data transmission and storage. User access control and role-based permissions for data security. Ensuring compliance with data privacy regulations.

Accessibility: Ensuring the applications are accessible to users with disabilities, complying with accessibility standards.

The Fully Equipped Fleet Management System (FMS) will streamline fleet operations, improve efficiency, enhance driver safety, and contribute to cost savings. It will empower fleet supervisors, drivers, and managers with real-time insights and tools for informed decision-making, maintenance planning, and route optimization. The system will cater to both traditional and electric vehicle fleets, enabling organizations to transition toward more sustainable transportation options.

**MINIMUM SPECIFICATIONS FOR IP CAMERA NETWORK VIDEO RECORDING (NVR) SOFTWARE USED FOR WEB/LIVE STREAMING OF ANIMAL LIVE FEED AND CONNECTIVITY WITH THE WEBSITE AND MOBILE APP.**

Project Overview:

- The Safari Animal Webcam Streaming project aims to provide real-time video streaming of wildlife in Lahore Safari to enhance visitor engagement, education, and conservation efforts. Live streaming of safari animals will be made available through a dedicated website and mobile application.

Camera Deployment:

- Installation of high-quality webcams at strategic locations within Lahore Safari to capture animal habitats and activities.
- Deployment of cameras with the capability to stream high-definition video in real-time.

Live Streaming Infrastructure:

- Establishment of a robust live streaming infrastructure for video capture, encoding, and distribution.
- Ensuring low-latency, high-quality video streaming for website and mobile app viewers.

Web and Mobile Applications:

- Development of a user-friendly website and a dedicated mobile application for both Android and iOS platforms.
- Implementation of intuitive user interfaces for easy access to live animal streams.
- The facility will be added in the already existing mobile app and web.

Multiple Camera Feeds:

- Providing access to multiple camera feeds to showcase diverse wildlife areas within the safari.
- Cameras covering various animal enclosures, feeding stations, and watering holes.

#### Video Archives:

- Archiving of live streams for later viewing, enabling users to revisit exciting animal moments.
- User-friendly navigation to access archived videos by date, animal species, or camera location.

**Accessibility:** Ensuring web and mobile applications are accessible to a broad audience, including those with disabilities. Providing video captions and screen reader compatibility.

**Security and Privacy:** Implementing security measures to protect animal habitats and minimize disturbances from the cameras. Ensuring the privacy and safety of animals and visitors.

**Monitoring and Maintenance:** Real-time monitoring of camera health and video quality to ensure uninterrupted streaming. Routine maintenance and technical support for both the hardware and software components.

The Safari Animal Webcam Streaming project will offer a captivating and educational experience to both on-site and remote visitors. It will contribute to wildlife conservation efforts, promote biodiversity awareness, and increase the engagement of a global audience with the remarkable wildlife found within Lahore Safari.

### **SPECIFICATIONS FOR HIGH-PERFORMANCE LOAD BALANCER: LINUX-BASED, SUPPORTS VARIOUS ALGORITHMS, SESSION PERSISTENCE, SSL TERMINATION, SECURITY FEATURES, SCALABILITY, MONITORING, AND FAILOVER**

#### **Platform:**

Operating System: Linux-based (e.g., CentOS, Ubuntu)

Hardware: High-performance server with multiple CPUs and network interfaces

#### **Load Balancing Algorithms:**

Round Robin: Distributes requests evenly across backend servers.

Least Connections: Directs traffic to the server with the fewest active connections.

Weighted Round Robin: Assigns weight to servers for proportional traffic distribution.

Weighted Least Connections: Assigns weight based on server load for balanced distribution.

#### **Traffic Management:**

Session Persistence: Supports session persistence for maintaining user sessions.

Path-Based Routing: Routes traffic based on URL paths.

URL Rewriting: Allows URL manipulation for redirection or routing.

Health Checks: Periodic checks to monitor backend server health.

#### **Security:**

SSL Termination: Handles SSL/TLS encryption and decryption.

Web Application Firewall (WAF): Protects against web application vulnerabilities.

Access Control: Implements access control lists and IP whitelisting.

#### **Scalability:**

Auto-Scaling Integration: Works seamlessly with auto-scaling groups.

Dynamic Configuration: Supports dynamic addition/removal of backend servers.

#### **Monitoring and Analytics:**

Metrics: Provides performance metrics and monitoring data.

Logging: Logs request/response data for analysis.

Integration: Integrates with monitoring and alerting tools.

#### **Failover and High Availability:**

Active-Active Mode: Configurable as active-active for redundancy.

Virtual IPs: Supports virtual IP failover for seamless failover.

**MINIMUM SPECIFICATIONS FOR ADVANCE IT AND NETWORK MONITORING SOLUTION UPTO 100 NODES WITH REAL-TIME AVAILABILITY AND PERFORMANCE MONITORING, ALERTING, CROSS-PLATFORM COMPATIBILITY, CUSTOMIZABLE CONFIGURATIONS, INTEGRATIONS, AND SECURITY FEATURES**

**Monitoring Features:**

- Node Count: Up to 100 nodes
- Availability Monitoring: Real-time monitoring of application uptime
- Performance Monitoring: Continuous tracking of resource utilization
- Alerting: Instant notifications and alarms, email reporting
- Dashboard: Intuitive web-based interface for visualizing metrics

**Supported Platforms:**

- Operating Systems: Linux, Windows, macOS
- Cloud Platforms: AWS, Azure, GCP, and more
- Applications: Wide range of data center applications and services

**Monitoring Metrics:**

- CPU and Memory Usage: Resource consumption insights
- Network Traffic: Bandwidth utilization monitoring
- Disk Space: Storage usage tracking
- Service Availability: Monitoring application and service states
- Custom Metrics: Ability to track application-specific metrics

**Monitoring Modes:**

- Agent-Based Monitoring: Installation of agent on monitored nodes
- Agentless Monitoring: Utilizing SNMP, APIs, and other protocols
- Hybrid Monitoring: Combination of agent-based and agentless approaches

**Configuration and Management:**

- Automatic Discovery: Automated identification of networked devices
- Configuration Templates: Pre-configured settings for popular applications
- Customization: Tailor monitoring settings to specific application needs
- Scalability: Easily expand monitoring coverage as your infrastructure grows

**Alerting and Reporting:**

- Alert Prioritization: Differentiated alert levels (critical, warning)
- Escalation Rules: Define escalation paths and notification sequences
- Reporting: Generate detailed performance and availability reports

**Integration:**

- Third-Party Integrations: Connects with various ticketing and collaboration tools
- APIs: Integration with external systems for data sharing

**Security:**

- Authentication and Authorization: User access controls
- Encryption: Secure communication between components

**Deployment Options:**

- On-Premises: Install in on-premises environment

**Scalability:**

- Node Additions: Easily increase monitoring capacity with licensing updates
- Cluster Mode: Support for high availability and load distribution

**Customization and Support:**

- Custom Development: Extensibility through plugins and custom scripts
- Technical Support: Access to documentation, forums, and support services

**SPECIFICATIONS FOR SOFT NETWORK VIDEO RECORDER (SNVR) SOLUTION, WITH MULTI-CAMERA SUPPORT, ADVANCED VIDEO COMPRESSION, AI INTEGRATION, SCALABLE STORAGE, RAID SUPPORT, SMART SEARCH, REMOTE ACCESS, ANALYTICS, SECURITY, SCALABILITY,**

**Channels:**

- Support for multiple camera streams simultaneously.
- Video Compression: H.265, H.264, or other advanced video compression standards.
- Recording Resolution: High-definition resolution support.
- Bit Rate: Configurable bit rate settings for optimal storage usage.

**Storage Capacity:**

- Scalable storage options for short-term and long-term data.
- Hard Drive Bays: Multiple bays for hard drive installation.
- RAID Support: Support for RAID configurations for data redundancy.

**Data Management:**

- Smart Search: Search recorded footage based on AI-detected events.
- Custom Alerts: Customizable alerts triggered by specific people counting events.
- Data Export: Export people counting data for external analysis.
- Integration and Connectivity:

**Camera Integration:**

- Seamless integration with CCTV and streaming cameras.
- Network Connectivity: Ethernet connectivity for camera streams.
- Remote Access: Web-based and mobile app access for remote management.
- Analytics and Reporting:

**Video Playback:**

- Playback of recorded footage.
- Timeline Navigation: Easy navigation through recorded events.

**Data Encryption:**

- Secure data transmission and storage.
- User Authentication: Role-based user access controls.

**Scalability:**

- Expandable: Add more cameras and storage as needed.
- Multi-NVR Management: Manage multiple NVRs from a centralized console.

**Compatibility:**

- Camera Compatibility: Supports a wide range of IP cameras.
- Software Compatibility: Integration with various video management software.

**Remote Management:**

- Mobile App: Mobile app for remote monitoring and alerts.

**Warranty:**

- 1-year warranty

**SPECIFICATIONS FOR ENTERPRISE BACKUP SOLUTION WITH VERSATILE DATA SUPPORT, MULTIPLE BACKUP TYPES, SNAPSHOT INTEGRATION, APPLICATION-AWARENESS, ENCRYPTION, ON-PREMISES AND HOSTED DEPLOYMENT OPTIONS, SAN-BASED STORAGE, CENTRALIZED MANAGEMENT, DISASTER RECOVERY, MULTI-PLATFORM COMPATIBILITY, SECURITY FEATURES, SCALABILITY, AND BACKUP VALIDATION**

- Data Types: Supports structured and unstructured data, databases, virtual machines, and applications.
- Backup Types: Full, incremental, and differential backups.
- Snapshot Integration: Integration with storage snapshots for faster backups.
- Application-Aware Backup: Support for consistent application backups.

Backup Compression: Data compression for efficient storage utilization.

Deduplication: Elimination of redundant data for optimized storage.

Encryption: Data encryption in transit and at rest for security.

**Deployment Options:**

On-Premises Backup: Installed within the organization's infrastructure.

Hosted Backup on SAN: Utilizes a remote SAN infrastructure for backup storage.

**Hosted Backup on SAN Features:**

Storage Area Network (SAN): Utilizes high-speed SAN infrastructure for backup storage.

Redundancy: SAN redundancy for data protection and high availability.

Scalability: Easily expand storage capacity as backup needs grow.

Performance: High-speed SAN architecture for quick backup and restore operations.

**Backup Management:**

Centralized Management Console: Web-based interface for configuring and managing backups.

Policy-Based Backup: Flexible backup policies based on data retention and priority.

Automated Scheduling: Automated backup scheduling for convenience.

Retention Policies: Configurable retention settings for data lifecycle management.

Monitoring and Reporting: Real-time monitoring and comprehensive reporting.

**Disaster Recovery:**

Off-Site Copy: Option to create off-site copies for disaster recovery.

Disaster Recovery Testing: Ability to test recovery procedures without affecting production.

**Integration and Compatibility:**

Multi-Platform Support: Compatible with diverse operating systems and platforms.

Application Integration: Integration with various applications and databases.

Cloud Integration: Backup to and from cloud storage services.

**Security:**

Access Controls: Role-based access and authorization for secure management.

Data Encryption: Encryption of backup data and communication channels.

**Performance and Scalability:**

Scalable Architecture: Scales to accommodate growing backup data.

Parallel Backup: Ability to perform multiple backups simultaneously.

Network Optimization: Efficient data transfer mechanisms for reduced impact on network.

**Compliance and Regulations:**

GDPR and Data Protection: Compliant with data protection regulations.

**Customization and Extensibility:**

Custom Scripts and Hooks: Extensibility through custom scripts and hooks.

APIs: Integration with third-party tools and automation frameworks.

**Backup Testing and Validation:**

Backup Verification: Regular backup validation to ensure recoverability.

**Documentation and Training:**

User Documentation: Comprehensive documentation for setup and usage.

Training: Resources for training administrators on best practices.

**MINIMUM SPECIFICATIONS FOR ADVANCED DATA ANALYTICS SOLUTION: DATA INTEGRATION, CLEANSING, MODELING, DASHBOARDING, AI-POWERED PEOPLE COUNTING, AND E-TICKETING SYSTEM INTEGRATION, BUSINESS UNIT MONITORING, DATABASE INTEGRATION, SECURITY, INTEGRATION CAPABILITIES, AI-DRIVEN INSIGHTS, SCALABILITY**

**Data Integration:** Can connect to a wide variety of data sources, including on-premises data warehouses, cloud data warehouses, and online SaaS applications.

**Data Cleansing:** Has built-in tools for cleansing and transforming raw data, making it ready for analysis.

**Data Modeling:** Can create data models that make it easy to analyze complex data sets.

**Dashboard and Reporting:** Provides interactive dashboards and reports that make it easy to visualize data and share insights with others.

**AI Integration for People Counting:** Can integrate with AI models to provide accurate people counting in the zoo. This can be used to track visitor traffic patterns and trends.

**AI Features for BU Monitoring:** Can use AI to detect anomalies, forecast future trends, identify root causes of performance issues, and optimize resource allocation.

**Database Integration:** Can integrate with a variety of databases, including SQL Server, Oracle, and MySQL. This allows you to store your data in a centralized location for easy access and analysis.

**Data Analytics:** Provides a variety of tools for analyzing data, including ad hoc queries, data exploration, and segmentation.

**Security and Privacy:** Uses industry-standard security measures to protect your data, including data encryption and role-based access control.

**Integration:** Can be integrated with a variety of external systems and applications, such as Azure Active Directory, Salesforce, and SAP.

**AI-Driven Insights:** Uses AI to provide insights into your data, such as predictive analytics and smart alerts.

**Scalability:** Scalable to meet the needs of your business, whether you have a small team or a large enterprise.

### Item 8: Professional Services

Sr. No.	Minimum Requirement	Minimum Qty	Brand and Specifications (to be filled by bidder)	Qty
<b>Professional Services</b>				
1	Professional Implementation and Integration Services: Deployment, Configuration, Integration, Testing, Optimization, Documentation, Training, Support, Project Management, Quality Assurance, Security, Documentation and Training, Post-Implementation Support, Completion and Handover.	L.S		

**Minimum System Requirement**

**Project Scope:** The project entails the professional implementation and integration services, covering deployment, configuration, integration, testing, optimization, documentation, training, support, project management, quality assurance, security, post-implementation support, and completion and handover. The focus is on seamlessly deploying and configuring the services, ensuring integration with existing systems, conducting rigorous testing, and fine-tuning for optimal performance. Comprehensive documentation and user training programs will be developed to facilitate smooth operations. Ongoing support, project management, and adherence to quality and security standards are integral components. Post-implementation, the project will address any issues that arise and ensure a successful handover of documentation and access to the client for independent management. This concise scope outlines a systematic and efficient approach to delivering professional services throughout the project lifecycle.

**Note:** This is a complete turnkey solution the selected vendor will be responsible 1-year support/warranty for the provided hardware/solution on site.

**Stamp & Signature of Bidder** \_\_\_\_\_



## 8.9. Contract Form

### *(For Turnkey Solution)*

THIS AGREEMENT made on the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_ between *[name of Procuring Agency]* of *[country of Procuring Agency]* (hereinafter called “the Procuring Agency”) on the one part and *[name of Supplier]* of *[city and country of Supplier]* (hereinafter called “the Supplier”) on the other part:

WHEREAS the Procuring Agency invited Bids for certain goods and ancillary services, viz., *[brief description of goods and services]* and has accepted a Bid by the Supplier for the supply of those goods and services in the sum of *[contract price in words and figures]* (hereinafter called “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
  - (a) the Bid Form and the Price Schedule submitted by the Bidder;
  - (b) the Schedule of Requirements;
  - (c) the Technical Specifications;
  - (d) the General Conditions of Contract;
  - (e) the Special Conditions of Contract; and
  - (f) the Procuring Agency’s Notification of Award.
  - (g) Contract agreement
  - (h) Complete Bidding document
3. In consideration of the payments to be made by the Procuring Agency to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Procuring Agency to provide the goods and services and to rectify defects therein in conformity with all respects in accordance with the provisions of the Contract.
4. The Procuring Agency hereby covenants to pay the Supplier in consideration of the provision of the goods and services and the rectification of defects therein, the Contract Price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year mentioned above.

Signed, sealed, delivered by \_\_\_\_\_ the \_\_\_\_\_ (for the Procuring Agency)

Signed, sealed, delivered by \_\_\_\_\_ the \_\_\_\_\_ (for the Supplier)

**8.10. Financial Bid Form/Price Schedule**  
**(For Turnkey Solution)**

*[To be signed & stamped by the Bidder and reproduced on the letter head. To be attached with Financial Bid]*

Safari Zoo Lahore (Turn Key Solution)							
Sr. No.	Item name	Specifications/ dimensions	Country of Origin	Brand name, make & model	Unit price (inclusive of all taxes & duties etc.)	Quantity	Total price (inclusive of all taxes & duties etc.)
<b>1</b>	Turnkey Solution for Safari Zoo Lahore						
<b>TOTAL PRICE</b>							

Total Bid value (against which a Bid shall be evaluated) in figure.

Total Bid value (against which a Bid shall be evaluated) in words.

**Note:**

- a) Price and quantity of each Item need to be mentioned separately.
- b) In case of difference between unit price and total price, unit price shall prevail and total price shall be "final". *(Please refer ITB clause 2.5.6).*
- c) In case of difference between amount in "words" and amount in "figures", amount in "words" shall be considered final.

**Stamp & Signature of Bidder** \_\_\_\_\_

**8.11. Bid Security Form**  
**(For Turnkey Solution)**

*[To be signed & stamped by the Bidder and reproduced on the letter head. To be attached with Financial Bid]*

Whereas *[name of the Bidder]* (hereinafter called "the Bidder") has submitted its Bid dated *[date of submission of Bid]* for the supply of *[name and/or description of the goods]* (hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that WE *[name of bank]* of *[name of country]*, having our registered office at *[address of bank]* (hereinafter called "the Bank"), are bound unto *[name of Procuring Agency]* (hereinafter called "the Procuring Agency") in the sum of for which payment well and truly to be made to the said Procuring Agency, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this \_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Bid Form; or
2. If the Bidder, having been notified of the acceptance of its Bid by the Procuring Agency during the period of Bid validity:
  - (a) fails or refuses to execute the Contract Form, if required; or
  - (b) fails or refuses to furnish the Performance Guarantee, in accordance with the Instructions to Bidders;

we undertake to pay to the Procuring Agency up to the above amount upon receipt of its first written demand, without the Procuring Agency having to substantiate its demand, provided that in its demand the Procuring Agency will note that the amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including thirty (30) days after the period of Bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

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*[Signature of the bank]*

## Section IX- Check List

**(For Turnkey Solution)**

*[To be signed and stamped and presented on Bidder's letter head pad]*

The provision of this checklist is essential prerequisite along with submission of tenders (with technical proposal).

Sr. #	Detail	Responsive	Non-responsive
1	____% Bid Security of estimated cost of articles / items given by the department. The Bid security must be submitted with technical proposal.		
2	Active Registration with Income Tax Authorities (National Tax Number NTN), as per the Evaluation Criteria		
3	Copy of active Registration with Sales Tax Authorities (STRN), as per the Evaluation Criteria		
4	Copy of active Registration (Professional Tax Certificate), as per the Evaluation Criteria		
5	Relevant Past Experience Documents, as per the Evaluation Criteria		
6	Technical Bid Form (as per <b>form 8.8</b> of Bidding documents) on letter head of the firm duly signed and stamped.		
7	Financial Bid Form (as per <b>form 8.10</b> of Bidding documents) on letter head of the firm, duly signed and stamped.		
8	Bid Security Form (as per <b>form 8.11</b> of Bidding documents) on letter head of the firm, duly signed and stamped.		
9	General Information Form (as per <b>form 8.5</b> of Bidding documents) on letter head of the firm duly signed and stamped.		
10	Affidavit (as per <b>form 8.6</b> ) on non-judicial Stamp Paper of Rs. 100/- (vi) The firm is not blacklisted from any Department. (vii) The documents/photocopies provided with Bid are authentic. In case of any fake/bogus document look at any stage. They shall be black listed as per Rules / Laws. (viii) Affidavit for correctness of information. (ix) Contractor/firm is not blacklisted or subject to any pending litigation with any Government or Public Department. (x) Compliance to the Section – III “Technical Specifications” and Section – VII “Schedule of Requirements”		
11	Authorization requirements, as per the Evaluation Criteria		

**Stamp & Signature of Bidder** \_\_\_\_\_