BIDDING DOCUMENTS

for

E-LEARNING PLATFORM DEVELOPMENT WITH INTEGRATED DATA AND COMMUNICATIONS SYSTEM

Preface

These Philippine Bidding Documents (PBDs) for the procurement of Goods through Competitive Bidding have been prepared by the Government of the Philippines for use by any branch, constitutional commission or office, agency, department, bureau, office, or instrumentality of the Government of the Philippines, National Government Agencies, including Government-Owned and/or Controlled Corporations, Government Financing Institutions, State Universities and Colleges, and Local Government Unit. The procedures and practices presented in this document have been developed through broad experience, and are for mandatory use in projects that are financed in whole or in part by the Government of the Philippines or any foreign government/foreign or international financing institution in accordance with the provisions of the 2016 revised Implementing Rules and Regulations of Republic Act No. 9184.

The bidding Documents shall clearly and adequately define, among others: (i) the objectives, scope, and expected outputs and/or results of the proposed contract or Framework Agreement, as the case may be; (ii) the eligibility requirements of Bidders; (iii) the expected contract or Framework Agreement duration, the estimated quantity in the case of procurement of goods, delivery schedule and/or time frame; and (iv) the obligations, duties, and/or functions of the winning bidder.

Care should be taken to check the relevance of the provisions of the PBDs against the requirements of the specific Goods to be procured. If duplication of a subject is inevitable in other sections of the document prepared by the Procuring Entity, care must be exercised to avoid contradictions between clauses dealing with the same matter.

Moreover, each section is prepared with notes intended only as information for the Procuring Entity or the person drafting the Bidding Documents. They shall not be included in the final documents. The following general directions should be observed when using the documents:

a. All the documents listed in the Table of Contents are normally required for the procurement of Goods. However, they should be adapted as necessary to the circumstances of the particular Procurement Project.

b. Specific details, such as the "*name of the Procuring Entity*" and "*address for bid submission*," should be furnished in the Instructions to Bidders, Bid Data Sheet, and Special Conditions of Contract. The final documents should contain neither blank spaces nor options.

c. This Preface and the footnotes or notes in italics included in the Invitation to Bid, Bid Data Sheet, General Conditions of Contract, Special Conditions of Contract, Schedule of Requirements, and Specifications are not part of the text of the final document, although they contain instructions that the Procuring Entity should strictly follow.

d. The cover should be modified as required to identify the Bidding Documents as to the Procurement Project, Project Identification Number, and Procuring Entity, in addition to the date of issue.

e. Modifications for specific Procurement Project details should be provided in the Special Conditions of Contract as amendments to the Conditions of Contract. For easy completion, whenever reference has to be made to specific clauses in the Bid Data Sheet or Special Conditions of Contract, these terms shall be printed in bold typeface

on Sections I (Instructions to Bidders) and III (General Conditions of Contract), respectively.

f. For guidelines on the use of Bidding Forms and the procurement of Foreign-Assisted Projects, these will be covered by a separate issuance of the Government Procurement Policy Board.

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BIDS AND AWARDS COMMITTEE

INVITATION TO BID

The Mountain Province State University invites interested contractors/suppliers to bid for the following project:

Name of Project	Location	ABC	Duration	Fund Source	Bid Documents Fee
E-LEARNING PLATFORM DEVELOPMENT WITH INTEGRATED DATA AND COMMUNICATIONS SYSTEM	Bontoc Campus, Bontoc, Mountain Province	P900,000,000.00	360 CD	01	P75,000.00

Bids received in excess of the ABC shall be automatically rejected at bid opening.

Prospective bidders should possess a valid Business Permit applicable to the contract and have completed a similar contract with a value of at least 50% of the ABC, and have key personnel and equipment (listed in Eligibility forms) available for the delivery of the equipment, parts, and other peripherals. The BAC will use non-discretionary pass/fail criteria in the Eligibility Check/Screening as well as the Preliminary Examination of Bids. The BAC will conduct post qualification of the lowest calculated bid.

All particulars relative to Eligibility Statement and Screening, Bid Security, Performance Security, Pre-Bidding Conference, Evaluation of Bids, Post-Qualification and Award of Contract shall be governed by the pertinent provisions of the Revised R.A. 9184 and its Implementing Rules and Regulation (IRR).

In the interest of the efficient and effective implementation of the project, all prospective bidders are encouraged to attend the scheduled Pre-bid Conference.

Interested bidders may obtain further information from the Procurement Services Office at the 5th Floor, Administration Building, Bontoc Campus and inspect the Bidding Documents from *8 o'clock a.m. to 5 o'clock p.m.*

The schedules of activities are as follows:

BAC Activities	Schedule
1. Advertisement/Posting of Invitation to Bid	March 8 – March 17, 2025
2. Issuance and availability of Bidding Documents Eligibility Forms	March 8 – March 31, 2025 (8:00 A.M to 5:00 P.M)
3. Pre-bid Conference Time: Place:	**March 17, 2025** 2:00 PM Office of the Vice President for Administration & Finance, 5th Floor, Administration Bldg. Bontoc Campus, Bontoc, Mtn. Prov.
4. Request for clarification	March 18, 2025
5. Submission, receipt, and opening of Bids Closing Time: Place	**March 31, 2025** 9:30 A.M. Procurement Services Office, 5th Floor, Administration Bldg.

Opening of Bids: Place:	Bontoc Campus, Bontoc, Mtn. Prov. 10:00 A.M. Office of the Vice President for Administration & Finance, 5th Floor, Administration Bldg. Bontoc Campus, Bontoc, Mtn. Prov.
6. Bid Evaluation	March 31, 2025 Start at 10:00 A.M. to 5:00 P.M.
7. Post – qualification	April 1 – April 10, 2025
8. Approval of resolution	April 11, 2025
9. Issuance of Notice of Award	Upon approval of the BOR
10. Contract preparation and signing	Upon receipt of Notice of Award by the winning bidder
11. Approval of Contract by higher authority	After the signing of the contract by both parties
12. Issuance of Notice to Proceed	Upon approval of the contract

The BAC will issue to prospective bidders the Bidding Documents at the *Procurement Services Office, 5th Floor, Administration Building, Bontoc Campus,* upon payment of a non-refundable amount indicated above at *Cashier's Office*. Prospective bidders shall submit the Bid Documents to the BAC at the same address stated above.

The *Mountain Province State University* assumes no responsibility whatsoever to compensate or indemnify bidders for any expenses incurred in the preparation of their bids.

Further, the Bids and Awards Committee (BAC) assumes no responsibility in case of non-awarding of the contract for reasons outside the control of the University.

Approved by:

REYNALDO P. GAYO JR.
Chairperson

For further inquiries,
Please contact:

NORMA F. TACUT
Head, BAC Secretariat
09213133387

Section II. Instructions to Bidders

1. Scope of Bid

The Procuring Entity, ***Mountain Province State University*** wishes to receive Bids for the ***E-LEARNING PLATFORM DEVELOPMENT WITH INTEGRATED DATA AND COMMUNICATIONS SYSTEM.***

The Procurement Project (referred to herein as "Project") is composed of ***One Lot*** the details of which are described in Section VII (Technical Specifications).

2. Funding Information

2.1. The GOP through the source of funding as indicated below for *CY 2025* in the amount of ***Php 900,000,000.00***.

2.2. The source of funding is:

The General Appropriations Act of 2025.

3. Bidding Requirements

The Bidding for the Project shall be governed by all the provisions of RA No. 9184 and its 2016 revised IRR, including its Generic Procurement Manuals and associated policies, rules and regulations as the primary source thereof, while the herein clauses shall serve as the secondary source thereof.

Any amendments made to the IRR and other GPPB issuances shall be applicable only to the ongoing posting, advertisement, or **IB** by the BAC through the issuance of a supplemental or bid bulletin.

The Bidder, by the act of submitting its Bid, shall be deemed to have verified and accepted the general requirements of this Project, including other factors that may affect the cost, duration and execution or implementation of the contract, project, or work and examine all instructions, forms, terms, and project requirements in the Bidding Documents.

4. Corrupt, Fraudulent, Collusive, and Coercive Practices

The Procuring Entity, as well as the Bidders and Suppliers, shall observe the highest standard of ethics during the procurement and execution of the contract. They or through an agent shall not engage in corrupt, fraudulent, collusive, coercive, and obstructive practices defined under Annex "I" of the 2016 revised IRR of RA No. 9184 or other integrity violations in competing for the Project.

5. Eligible Bidders

5.1. Only Bids of Bidders found to be legally, technically, and financially capable will be evaluated.

5.2. Pursuant to Section 23.4.1.3 of the 2016 revised IRR of RA No.9184, the Bidder shall have an SLCC that is at least one (1) contract similar to the Project the value of which,

adjusted to current prices using the PSA's CPI, must be at least equivalent to at least fifty percent (50%) of the ABC.

5.3. The Bidders shall comply with the eligibility criteria under Section 23.4.1 of the 2016 IRR of RA No. 9184.

6. Origin of Goods

There is no restriction on the origin of goods other than those prohibited by a decision of the UN Security Council taken under Chapter VII of the Charter of the UN, subject to Domestic Preference requirements under **ITB** Clause 18.

7. Subcontracts

7.1. The Bidder may subcontract portions of the Project to the extent allowed by the Procuring Entity as stated herein, but in no case more than twenty percent (20%) of the Project.

The Procuring Entity has prescribed that Subcontracting is allowed. The portions of Project and the maximum percentage allowed to be subcontracted are indicated in the **BDS**, which shall not exceed twenty percent (20%) of the contracted Goods

7.2. The Bidder must submit together with its Bid the documentary requirements of the subcontractor(s) complying with the eligibility criteria stated in **ITB** Clause 5 in accordance with Section 23.4 of the 2016 revised IRR of RA No. 9184 pursuant to Section 23.1 thereof.

7.3. The Supplier may identify its subcontractor during the contract implementation stage. Subcontractors identified during the bidding may be changed during the implementation of this Contract. Subcontractors must submit the documentary requirements under Section 23.1 of the 2016 revised IRR of RA No. 9184 and comply with the eligibility criteria specified in **ITB** Clause 5 to the implementing or end-user unit.

7.4. Subcontracting of any portion of the Project does not relieve the Supplier of any liability or obligation under the Contract. The Supplier will be responsible for the acts, defaults, and negligence of any subcontractor, its agents, servants, or workmen as fully as if these were the Supplier's own acts, defaults, or negligence, or those of its agents, servants, or workmen.

8. Pre-Bid Conference

The Procuring Entity will hold a pre-bid conference for this Project on the specified date and time and either at its physical address and/or through videoconferencing/webcasting as indicated in paragraph 7 of the **IB.**

9. Clarification and Amendment of Bidding Documents

Prospective bidders may request for clarification on and/or interpretation of any part of the Bidding Documents. Such requests must be in writing and received by the Procuring Entity, either at its given address or through electronic mail indicated in the **IB**, at least ten (10) calendar days before the deadline set for the submission and receipt of Bids.

10. Documents comprising the Bid: Eligibility and Technical Components

10.1. The first envelope shall contain the eligibility and technical documents of the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.

10.2. The Bidder's SLCC as indicated in **BDS** Clause 5.2 should have been completed within *Five (5) Years* prior to the deadline for the submission and receipt of bids.

10.3. If the eligibility requirements or statements, the bids, and all other documents for submission to the BAC are in foreign language other than English, it must be accompanied by a translation in English, which shall be authenticated by the appropriate Philippine foreign service establishment, post, or the equivalent office having jurisdiction over the foreign bidder's affairs in the Philippines. Similar to the required authentication above, for Contracting Parties to the Apostille Convention, only the translated documents shall be authenticated through an apostille pursuant to GPPB Resolution No. 13-2019 dated 23 May 2019. The English translation shall govern, for purposes of interpretation of the bid.

11. Documents comprising the Bid: Financial Component

11.1. The second bid envelope shall contain the financial documents for the Bid as specified in **Section VIII (Checklist of Technical and Financial Documents)**.

11.2. If the Bidder claims preference as a Domestic Bidder or Domestic Entity, a certification issued by DTI shall be provided by the Bidder in accordance with Section 43.1.3 of the 2016 revised IRR of RA No. 9184.

11.3. Any bid exceeding the ABC indicated in paragraph 1 of the **IB** shall not be accepted.

12. Bid Prices

12.1. Prices indicated on the Price Schedule shall be entered separately in the following manner:

a. For Goods offered from within the Procuring Entity's country:

i. The price of the Goods quoted EXW (ex-works, ex-factory, ex-warehouse, ex-showroom, or off-the-shelf, as applicable);

ii. The cost of all customs duties and sales and other taxes already paid or payable;

iii. The cost of transportation, insurance, and other costs incidental to delivery of the Goods to their final destination; and

iv. The price of other (incidental) services, if any, listed in e.

b. For Goods offered from abroad:

i. Unless otherwise stated in the **BDS**, the price of the Goods shall be quoted delivered duty paid (DDP) with the place of destination in the Philippines as specified in the **BDS**. In quoting the price, the Bidder

shall be free to use transportation through carriers registered in any eligible country. Similarly, the Bidder may obtain insurance services from any eligible source country.

ii. The price of other (incidental) services, if any, as listed in **Section VII (Technical Specifications).**

13. Bid and Payment Currencies

13.1. For Goods that the Bidder will supply from outside the Philippines, the bid prices may be quoted in the local currency or tradeable currency accepted by the BSP at the discretion of the Bidder. However, for purposes of bid evaluation, Bids denominated in foreign currencies, shall be converted to Philippine currency based on the exchange rate as published in the BSP reference rate bulletin on the day of the bid opening.

13.2. Payment of the contract price shall be made in Philippine Pesos.

14. Bid Security

14.1. The Bidder shall submit a Bid Securing Declaration[1] or any form of Bid Security in the amount indicated in the **BDS**, which shall be not less than the percentage of the ABC in accordance with the schedule in the **BDS**.

14.2. The Bid and bid security shall be valid within the period specified in the **BDS**. Any Bid not accompanied by an acceptable bid security shall be rejected by the Procuring Entity as non-responsive.

15. Sealing and Marking of Bids

Each Bidder shall submit two copies of the first and second components of its Bid.

The Procuring Entity requests ***three (3) sets (1 original and 2 photocopies) hard copies*** of the Bid.

The Procuring Entity may request additional hard copies and/or electronic copies of the Bid. However, failure of the Bidders to comply with the said request shall not be a ground for disqualification.

If the Procuring Entity allows the submission of bids through online submission or any other electronic means, the Bidder shall submit an electronic copy of its Bid, which must be digitally signed. An electronic copy that cannot be opened or is corrupted shall be considered non-responsive and, thus, automatically disqualified.

16. Deadline for Submission of Bids

The Bidders shall submit on the specified date and time and either at its physical address or through online submission as indicated in paragraph 8 of the **IB.**

[1] In the case of Framework Agreement, the undertaking shall refer to entering into contract with the Procuring Entity and furnishing of the performance security or the performance securing declaration within ten (10) calendar days from receipt of Notice to Execute Framework Agreement.

17. Opening and Preliminary Examination of Bids

17.1. The BAC shall open the Bids in public at the time, on the date, and at the place specified in paragraph 9 of the **IB**. The Bidders' representatives who are present shall sign a register evidencing their attendance. In case videoconferencing, webcasting or other similar technologies will be used, attendance of participants shall likewise be recorded by the BAC Secretariat.

In case the Bids cannot be opened as scheduled due to justifiable reasons, the rescheduling requirements under Section 29 of the 2016 revised IRR of RA No. 9184 shall prevail.

17.2. The preliminary examination of bids shall be governed by Section 30 of the 2016 revised IRR of RA No. 9184.

18. Domestic Preference

The Procuring Entity will grant a margin of preference for the purpose of comparison of Bids in accordance with Section 43.1.2 of the 2016 revised IRR of RA No. 9184.

19. Detailed Evaluation and Comparison of Bids

19.1. The Procuring BAC shall immediately conduct a detailed evaluation of all Bids rated "*passed*," using non-discretionary pass/fail criteria. The BAC shall consider the conditions in the evaluation of Bids under Section 32.2 of the 2016 revised IRR of RA No. 9184.

19.2. If the Project allows partial bids, bidders may submit a proposal on any of the lots or items, and evaluation will be undertaken on a per lot or item basis, as the case maybe. In this case, the Bid Security as required by **ITB** Clause 14 shall be submitted for each lot or item separately.

19.3. The descriptions of the lots or items shall be indicated in **Section VII (Technical Specifications)**, although the ABCs of these lots or items are indicated in the **BDS** for purposes of the NFCC computation pursuant to Section 23.4.2.6 of the 2016 revised IRR of RA No. 9184. The NFCC must be sufficient for the total of the ABC.

19.4. The Project shall be awarded as one contract.

19.5. Except for bidders submitting a committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation, all Bids must include the NFCC computation pursuant to Section 23.4.1.4 of the 2016 revised IRR of RA No. 9184, which must be sufficient for the total of the ABC. For bidders submitting the committed Line of Credit, it must be at least equal to ten percent (10%) of the ABCs for all the lots or items participated in by the prospective Bidder.

20. Post-Qualification

Within a non-extendible period of ten (10) calendar days from receipt by the Bidder of the notice from the BAC that it submitted the Lowest Calculated Bid, the Bidder shall submit its latest income and business tax returns filed and paid through the BIR Electronic Filing and

Payment System (eFPS) and other appropriate licenses and permits required by law and stated in the **BDS**.

21. Signing of the Contract

The documents required in Section 37.2 of the 2016 revised IRR of RA No. 9184 shall form part of the Contract. Additional Contract documents are indicated in the **BDS**.

Section III. Bid Data Sheet

Bid Data Sheet

ITB Clause	
5.2	For this purpose, contracts similar to the Project shall be Implementation of Smart Campus or Information and Communication Technology (ICT) Modernization for Universities, completed within ***Five (5) Years*** prior to the deadline for the submission and receipt of bids. The Single Largest Completed Contract shall be equivalent to at least 50% of the Approved Budget of Contract (ABC).
7.1	*No further instructions.*
12	The price of the Goods shall be quoted in ***Philippine Peso***.
14.1	The bid security shall be in the form of a Bid Securing Declaration, or any of the following forms and amounts: a. The amount of not less than *two percent (2%) of ABC*, if bid security is in cash, cashier's/manager's check, bank draft/guarantee or irrevocable letter of credit; or b. The amount of not less than *five percent (5%) of ABC* if bid security is in Surety Bond.
19.3	*No further instructions.*
20.2	*Not applicable*
21.2	*Not applicable*

Section IV. General Conditions of Contract

1. Scope of Contract

This Contract shall include all such items, although not specifically mentioned, that can be reasonably inferred as being required for its completion as if such items were expressly mentioned herein. All the provisions of RA No. 9184 and its 2016 revised IRR, including the Generic Procurement Manual, and associated issuances, constitute the primary source for the terms and conditions of the Contract, and thus, applicable in contract implementation. Herein clauses shall serve as the secondary source for the terms and conditions of the Contract.

This is without prejudice to Sections 74.1 and 74.2 of the 2016 revised IRR of RA No. 9184 allowing the GPPB to amend the IRR, which shall be applied to all procurement activities, the advertisement, posting, or invitation of which were issued after the effectivity of the said amendment.

Additional requirements for the completion of this Contract shall be provided in the **Special Conditions of Contract** (**SCC).**

2. Advance Payment and Terms of Payment

2.1. Advance payment of the contract amount is provided under Annex "D" of the revised 2016 IRR of RA No. 9184.

2.2. The Procuring Entity is allowed to determine the terms of payment on the partial or staggered delivery of the Goods procured, provided such partial payment shall correspond to the value of the goods delivered and accepted in accordance with prevailing accounting and auditing rules and regulations. The terms of payment are indicated in the **SCC**.

3. Performance Security

Within ten (10) calendar days from receipt of the Notice of Award by the Bidder from the Procuring Entity but in no case later than prior to the signing of the Contract by both parties, the successful Bidder shall furnish the performance security in any of the forms prescribed in Section 39 of the 2016 revised IRR of RA No. 9184.

4. Inspection and Tests

The Procuring Entity or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Project specifications at no extra cost to the Procuring Entity in accordance with the Generic Procurement Manual. In addition to tests in the **SCC**, **Section IV (Technical Specifications)** shall specify what inspections and/or tests the Procuring Entity requires, and where they are to be conducted. The Procuring Entity shall notify the Supplier in writing, in a timely manner, of the identity of any representatives retained for these purposes.

All reasonable facilities and assistance for the inspection and testing of Goods, including access to drawings and production data, shall be provided by the Supplier to the authorized inspectors at no charge to the Procuring Entity.

5. Warranty

6.1. In order to assure that manufacturing defects shall be corrected by the Supplier, a warranty shall be required from the Supplier as provided under Section 62.1 of the 2016 revised IRR of RA No. 9184.

6.2. The Procuring Entity shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall, repair or replace the defective Goods or parts thereof without cost to the Procuring Entity, pursuant to the Generic Procurement Manual.

6. Liability of the Supplier

The Supplier's liability under this Contract shall be as provided by the laws of the Republic of the Philippines.

If the Supplier is a joint venture, all partners to the joint venture shall be jointly and severally liable to the Procuring Entity.

Section V. Special Conditions of Contract

Notes on the Special Conditions of Contract

Similar to the BDS, the clauses in this Section are intended to assist the Procuring Entity in providing contract-specific information in relation to corresponding clauses in the GCC found in Section IV.

The Special Conditions of Contract (SCC) complement the GCC, specifying contractual requirements linked to the special circumstances of the Procuring Entity, the Procuring Entity's country, the sector, and the Goods purchased. In preparing this Section, the following aspects should be checked:

a. Information that complements provisions of the GCC must be incorporated.

b. Amendments and/or supplements to provisions of the GCC as necessitated by the circumstances of the specific purchase, must also be incorporated.

However, no special condition which defeats or negates the general intent and purpose of the provisions of the GCC should be incorporated herein.

Special Conditions of Contract

GCC Clause	
1	**Delivery and Documents –** For purposes of the Contract, "EXW," "FOB," "FCA," "CIF," "CIP," "DDP" and other trade terms used to describe the obligations of the parties shall have the meanings assigned to them by the current edition of INCOTERMS published by the International Chamber of Commerce, Paris. The Delivery terms of this Contract shall be as follows: *[For Goods supplied from abroad, state:]* "The delivery terms applicable to the Contract are DDP delivered [*indicate place of destination*]. In accordance with INCOTERMS." *[For Goods supplied from within the Philippines, state:*] "The delivery terms applicable to this Contract are delivered *[indicate place of destination]*. Risk and title will pass from the Supplier to the Procuring Entity upon receipt and final acceptance of the Goods at their final destination." Delivery of the Goods shall be made by the Supplier in accordance with the terms specified in Section VI (Schedule of Requirements). For purposes of this Clause the Procuring Entity's Representative at the Project Site is _____. **Incidental Services –** The Supplier is required to provide all of the following services, including additional services, if any, specified in Section VI. Schedule of Requirements: a. performance 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 Entity's personnel, at the Supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Goods.

	The Contract price for the Goods shall include the prices charged by the Supplier for incidental services and shall not exceed the prevailing rates charged to other parties by the Supplier for similar services. **Spare Parts –** The Supplier is required to provide 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 Entity may elect to purchase from the Supplier, provided that this election shall not relieve the Supplier of any warranty obligations under this Contract; and b. in the event of termination of production of the spare parts: i. advance notification to the Procuring Entity of the pending termination, in sufficient time to permit the Procuring Entity to procure needed requirements; and ii. following such termination, furnishing at no cost to the Procuring Entity, the blueprints, drawings, and specifications of the spare parts, if requested. The spare parts and other components required are listed in **Section VI (Schedule of Requirements)** and the cost thereof are included in the contract price. The Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spare parts or components for the Goods for a period of three years. Spare parts or components shall be supplied as promptly as possible, but in any case, within three months of placing the order.
	Packaging – The Supplier shall provide such packaging of the Goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in this Contract. The packaging shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packaging 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. The packaging, 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 below, and in any subsequent instructions ordered by the Procuring Entity. The outer packaging must be clearly marked as follows: Name of the Procuring Entity Name of the Supplier Contract Description

	A packaging list identifying the contents and quantities of the package is to be placed on an accessible point of the outer packaging if practical. If not practical the packaging list is to be placed inside the outer packaging but outside the secondary packaging. **Transportation –** Where the Supplier is required under Contract to deliver the Goods CIF, CIP, or DDP, transport of the Goods to the port of destination or such other named place of destination in the Philippines, as shall be specified in this Contract, shall be arranged and paid for by the Supplier, and the cost thereof shall be included in the Contract Price. Where the Supplier is required under this Contract to transport the Goods to a specified place of destination within the Philippines, defined as the Project Site, transport to such place of destination in the Philippines, including insurance and storage, as shall be specified in this Contract, shall be arranged by the Supplier, and related costs shall be included in the contract price.
	Where the Supplier is required under Contract to deliver the Goods CIF, CIP or DDP, Goods are to be transported on carriers of Philippine registry. In the event that no carrier of Philippine registry is available, Goods may be shipped by a carrier which is not of Philippine registry provided that the Supplier obtains and presents to the Procuring Entity certification to this effect from the nearest Philippine consulate to the port of dispatch. In the event that carriers of Philippine registry are available but their schedule delays the Supplier in its performance of this Contract the period from when the Goods were first ready for shipment and the actual date of shipment the period of delay will be considered force majeure. The Procuring Entity accepts no liability for the damage of Goods during transit other than those prescribed by INCOTERMS for DDP deliveries. In the case of Goods supplied from within the Philippines or supplied by domestic Suppliers risk and title will not be deemed to have passed to the Procuring Entity until their receipt and final acceptance at the final destination. **Intellectual Property Rights –** The Supplier shall indemnify the Procuring Entity against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Goods or any part thereof.
	Warranty Retention: The obligations of the warranty shall be covered by either retention money in an amount equivalent to one percent (1%) of each payment, or special bank guarantee equivalent to one percent (1%) of the total contract price, or surety callable on demand equivalent to 10% of the total contract price. The said amounts shall only be released after the lapse of the warranty period.

	Deadline for approval of Project Plan and Systems Architecture and Design – The deadline for approved plan design must occur before the delivery start date and any adjustments on such design/specifications shall not be permissible after Thirty (30) calendar days following the start date. There shall only be two (2) allowable revisions and/or adjustments thereto, provided, that it is within the fifteen-day period. Any delay resulting from any change of the design/specifications of the PE shall be treated as PE's delay. **Material Adverse Government Action –** "Material Adverse Government Action" means any action or inaction of any Governmental Authority, national or local, which has a material adverse effect on any of the rights and privileges of, or on the performance or exercise thereof by the Winning Bidder or any of its subcontractors as may be allowed by law, or which has a material adverse effect on a Milestone or the ability of the Winning Bidder or its subcontractors as may be allowed by law, to comply with its contractual obligations in connection with the Project. The Winning Bidder shall not be imposed Liquidated Damages due to a MAGA Event. Further, MAGA Event may be considered for the purpose of suspending or extending implementation period. The PE shall assist the Winning Bidder in securing all necessary permits from other Governmental Authority or Entity, whether national or local.

Section VI. Schedule of Requirements

The delivery schedule for the ***E-LEARNING PLATFORM DEVELOPMENT WITH INTEGRATED DATA AND COMMUNICATIONS SYSTEM.***

Item	Description	Qty	Delivered Weeks/Months
4.1.1.1	Wall, Ceiling, and Floor Finishes	1 Lot	within 330 Calendar days
4.1.1.2	Lighting Works	1 Lot	within 330 Calendar days
4.1.1.3	Electrical Works	1 Lot	within 330 Calendar days
4.1.1.4	Cooling Equipment	1 Lot	within 330 Calendar days
4.1.1.6	Dome Camera	1 Lot	within 330 Calendar days
4.1.1.7	Door Access System	1 Lot	within 330 Calendar days
4.1.1.8	Essential Furnishing	1 Lot	within 330 Calendar days
4.1.1.9	55" LED Display Monitor	1 Lot	within 330 Calendar days
4.1.1.11	Table	1 Lot	within 330 Calendar days
4.1.1.11	Chair	1 Lot	within 330 Calendar days
4.2.1	Desktop Computer	1 Lot	within 330 Calendar days
4.2.1.4	34" Curved Monitor	1 Lot	within 330 Calendar days
4.2.1.7	650VA Uninterruptible Power Supply	1 Lot	within 330 Calendar days
4.2.1.9	Office Productivity Software	1 Lot	within 330 Calendar days
4.4	Out-Of-Band Switch	1 Lot	within 330 Calendar days
4.5	All-In-One Rack	1 Lot	within 330 Calendar days
5.1	Leaf Switch	1 Lot	within 330 Calendar days
5.1	Spine Switch	1 Lot	within 330 Calendar days
5.11	Short Range Transceiver	1 Lot	within 330 Calendar days
5.2	Enterprise NAS	1 Lot	within 330 Calendar days
5.3	Server Compute Nodes	1 Lot	within 330 Calendar days
6.1	Next Generation Firewall	1 Lot	within 330 Calendar days
6.1.3	Short Range Transceiver	1 Lot	within 330 Calendar days
6.2	Next Generation Firewall	1 Lot	within 330 Calendar days
6.2.7	Short Range Transceiver	1 Lot	within 330 Calendar days
6.3	Core Switch	1 Lot	within 330 Calendar days
6.3.11	Short Range Transceiver	1 Lot	within 330 Calendar days
6.4	Distribution Switch	1 Lot	within 330 Calendar days
6.4.11	Short Range Transceiver	1 Lot	within 330 Calendar days
6.5	32-Ports Aggregation Switch	1 Lot	within 330 Calendar days
6.6	48-Ports POE Access Switch	1 Lot	within 330 Calendar days
6.7	Indoor Access Point	1 Lot	within 330 Calendar days
6.8	Network Controller	1 Lot	within 330 Calendar days
6.9.1	Short Range Transceiver	1 Lot	within 330 Calendar days

6.9.2	Short Range Transceiver	1 Lot	within 330 Calendar days
6.9.3	Short Range Transceiver	1 Lot	within 330 Calendar days
6.10	Out-Of-Band Switch	1 Lot	within 330 Calendar days
6.11	1gbps Campus Internet	1 Lot	within 330 Calendar days
7.1.1	Integrated Student Information System	1 Lot	within 330 Calendar days
7.1.2	Human Resource Management System	1 Lot	within 330 Calendar days
7.1.3	Financial System	1 Lot	within 330 Calendar days
7.1.4	Records Management System	1 Lot	within 330 Calendar days
7.1.5	Campus-Wide Online Portal	1 Lot	within 330 Calendar days
7.1.6	Asset and Fleet Management System	1 Lot	within 330 Calendar days
7.1.7	Executive Management System	1 Lot	within 330 Calendar days
7.2.1	Library Management System	1 Lot	within 330 Calendar days
7.2.2	Learning Management System	1 Lot	within 330 Calendar days
8	Auditorium	1 Lot	within 330 Calendar days
9	Multimedia Conference Room	1 Lot	within 330 Calendar days
10	E-Classrooms	1 Lot	within 330 Calendar days
11	Computer Laboratory	1 Lot	within 330 Calendar days
12	Computer E-Laboratory	1 Lot	within 330 Calendar days
13	IP PBX Solution	1 Lot	within 330 Calendar days
14.1	Smart Interactive Board	1 Lot	within 330 Calendar days
14.2	All-In-One PC	1 Lot	within 330 Calendar days
14.2.6	Office Productivity Software	1 Lot	within 330 Calendar days
14.2.7	Endpoint Detection Software	1 Lot	within 330 Calendar days
14.3	General Purpose Laptop	1 Lot	within 330 Calendar days
14.3.6	Office Productivity Software	1 Lot	within 330 Calendar days
14.3.7	Endpoint Detection Software	1 Lot	within 330 Calendar days
14.4	High-Tier Laptop	1 Lot	within 330 Calendar days
14.4.7	Office Productivity Software	1 Lot	within 330 Calendar days
14.4.8	Endpoint Detection Software	1 Lot	within 330 Calendar days
14.5	All-In-One Printer	1 Lot	within 330 Calendar days
14.6	ID Printer	1 Lot	within 330 Calendar days
15.1	Professional Grade Camera	1 Lot	within 330 Calendar days
15.2	70-200mm F4 G OSS Lens	1 Lot	within 330 Calendar days
15.3	12-24mm F4 G Camera Lens	1 Lot	within 330 Calendar days
15.4	Uninterruptible Power Supply	1 Lot	within 330 Calendar days
15.5	Drone Camera	1 Lot	within 330 Calendar days

I hereby commit to comply and deliver all the above requirements in accordance with the above stated schedule.

_____ _____ _____

Name of Company Signature Over Printed Date

Section VII. Technical Specifications

TERMS OF REFERENCE

Mountain Province State University:
University Digital Modernization: Phase 1

1 Project Summary

This project encompasses a wide range of technological aspects, from high-level AI tools and robust security measures to the fundamental IT equipment. It covers the entire spectrum of technological needs, from the cutting-edge advancements of artificial intelligence to the essential hardware components that underpin digital operations.

Driven by the recent elevation of MPSPC status as a state university, this project aims to modernize the current digital infrastructure to cater the growing needs in network connectivity, data management and resiliency, and smart classrooms.

2 Project Description

2.1 Purpose

As part of the continuous effort of MPSU to deliver quality education, this project aims to enhance, scale and strengthen the IT infrastructure including the university information systems.

2.2 Key Elements of the Project

2.2.1 Virtualized Infrastructure

2.2.1.1 A new datacenter that can house all of the university systems and applications as well as data backups will be built as part of MPSU's redundancy initiative.

2.2.2 Core Network and Security

2.2.2.1 Continuous enhancement of the MPSU university requires additional network and security equipment. These shall strengthen the cybersecurity and scale the network to cover new facilities.

2.2.3 Multimedia Conference Room

2.2.3.1 Conference rooms should be designed to accommodate both in-person and virtual meetings. They should be equipped with modern technology, such as high-speed internet, video conferencing systems, and large display screens. Additionally, comfortable seating arrangements and appropriate lighting should be provided to create a productive and inviting atmosphere for both in-person and remote participants.

2.2.4 Administrative and Educational Systems

2.2.4.1 A modernized digital tool with a focus on centralizing and streamlining both administrative and educational systems that will enhance productivity efficiency, and improve resource allocation. This ensures that MPSU staff and educators can focus more on their students

2.2.5 Computer Laboratory

2.2.5.1 The university shall have dedicated spaces equipped with computers and essential software, providing a platform for learning, research, and creative exploration. These labs offer access to technology and resources that empower individuals to develop digital skills, solve problems, and innovate.

2.2.6 Computer e-Laboratory

2.2.6.1 The university shall have dedicated spaces equipped with high-spec computers and dedicated software for multimedia, CAD, and animation.

2.2.7 E-classrooms

2.2.7.1 Equipped Visual representations and interactive elements significantly enhance information comprehension and retention. By presenting information visually, complex ideas can be simplified and made more accessible to a wider audience. Additionally, interactive features allow users to actively engage with the content.

2.2.8 University Productivity

2.2.8.1 University staff and offices shall be provided with digital equipment to aid with their functions and improve efficiency.

2.2.9 Other Peripherals

2.2.9.1 To further enhance the learning environment and support the IT infrastructure, additional equipment will be provided. These supplementary tools will facilitate a more comprehensive and engaging learning experience for students and faculty alike.

3 General Scope of Works

3.1 Requirement Analysis

3.1.1 Project key elements shall undergo requirement analysis with all the stakeholders.

3.2 Detailed Business User Requirements, Technical Design Requirements, Implementation Plan, and System Manuals

A comprehensive business user requirement, technical design requirements, implementation plan and system manuals. The implementation plan will show the details of the project's timeline, milestones, deliverables, and resources required for the successful execution.

3.3 Infrastructure Setup

The project team will install and set up the necessary digital infrastructure required for the project, including servers, routers, switches, and related equipment.

3.4 Software Implementation

Based on the business user requirements and technical design requirements, installation, customization, and testing of all software and applications shall be performed to ensure full integration of all systems that form part of this project.

3.5 Testing and Quality Assurance

3.5.1.1 The project team will perform individual component testing, and system integration testing for all components to ensure that they meet the specified requirements and are free from defects and errors.

3.5.1.2 Test scripts and user acceptance testing (UAT) documents should be provided for a smoother handover to end users.

3.6 Training

Facilitate the delivery of knowledge transfer through technical orientation and training sessions.

4 Command and Control Center Equipment Requirements (Main Datacenter)

The Command-and-Control Center is to be located at the main office. Components to be included in this project includes the following:

4.1 Auxiliary Works and Services

4.1.1 The winning bidder must provide all essential works to prepare the area nominated by for MPSU to be its Command-and-Control Center. At a minimum, it must include the following:

4.1.1.1 Wall, ceiling, and floor finish

4.1.1.2 Lighting works

4.1.1.3 Electrical works

4.1.1.4 2 Units 2.5 HP Air Conditioner Split Type

4.1.1.5 Provision of network nodes

4.1.1.6 2 Units Dome Camera

4.1.1.7 Door Access System

4.1.1.8 Provision of furnishings and other fixtures necessary for a Command Center

4.1.1.9 Provision of 6 x 55” Display Monitor (Video Wall 3 x 2 Setup)

4.1.1.10 Electrical Works for connecting electricity supply wiring to electrical equipment.

4.1.1.11 Fixtures, Tables and Chairs for the Command Center

4.2 Provision of 6 Units Desktop Computers

4.2.1 The winning bidder must provide the following desktops to MPSU for its Command-and-Control Center. At a minimum, it must include the following:

4.2.1.1 Minimum of 10 Core Processor with 20MB Cache Memory

4.2.1.2 16GB Memory

4.2.1.3 512GB SSD Storage

4.2.1.4 34” curved Monitor

4.2.1.5 Keyboard

4.2.1.6 Mouse

4.2.1.7 UPS 650 VA

4.2.1.8 Windows Operating System (Version 11 or better)

4.2.1.9 Office Productivity Software (Word Processor, Spreadsheet, Slide Presentation)

4.3 Security Surveillance System

4.3.1 TCP/IP Based CCTV Cameras

4.3.2 Should support 12 VDC or 24 VAC.

4.3.3 Should support 1920 x 1080 Resolution.

4.3.4 Should support 25/30/50/60 fps.

4.3.5 Should be at least IP66 Ingress protection.

4.3.6 CCTV System is going to be installed in the NOCs of the different sites of MPSU

4.4 All In One Rack

4.4.1 Server Racks

The 5 racks will be located in MPSU Datacenter:

4.4.1.1 Rack configuration

4.4.1.1.1 Power input should be 220Vac, single phase, 50/60Hz.

4.4.1.1.2 Enclosure type should be fully enclosed hot and cold aisles(glass front door plus sold sheet metal rear door)

4.4.1.1.3 Available unit space shall be 29U

4.4.1.1.4 Single rack configuration

4.4.1.1.5 Rack size: (WxDxH) 600*1200*2000

4.4.1.1.6 Enclosure protection shall be IP50 rating.

4.4.1.1.7 Shall have an electronic door lock.

4.4.1.1.8 Rack enclosure is earthquake-resistant w/ seismic level 8 capability.

4.4.1.1.9 LED lighting shall be included in racks.

4.4.1.2 UPS

4.4.1.2.1 Shall have 1 unit of 6kVA UPS

4.4.1.2.2 UPS effeciency should be not less than 95%

4.4.1.2.3 Power meter included in UPS

4.4.1.2.4 UPS shall be capable for cloud monitoring through mobile phones or desktop

4.4.1.2.5 UPS shall have ethernet port for IoT connections

4.4.1.2.6 UPS shall have email and mobile notification.

4.4.1.3 PDU

4.4.1.3.1 With at least 2 unit of PDU.

4.4.1.3.2 Each PDU has 20*C13+4 *C19 sockets

4.4.1.3.3 PDU shall be CE certified.

4.4.1.4 Cooling

4.4.1.4.1 Cooling type is Split DX system

4.4.1.4.2 Cooling capacity shall be 4.2kW

4.4.1.4.3 Cooling air volume shall be 800m^3/h

4.4.1.4.4 Cooling refrigerant is R410a

4.4.1.4.5 Condensate pump shall be included

4.4.1.5 Miscellaneous Rack Requirement

4.4.1.5.1 User interface: 10.1-inch touch screen LCD

4.4.1.5.2 Connectivity: SNMP/HTTP

4.4.1.5.3 Smoke sensor included

4.4.1.5.4 Shall have temperature and humidity sensor.

4.4.1.5.5 Pop-up front and rear doors for emergency plans.

4.4.1.5.6 Water leakage sensors included.

4.4.1.6 Certification

4.4.1.6.1 MDC distributor shall have ISO 9001 certification

4.4.1.6.2 MDC distributor shall have ISO 27001 certification

5 Virtualized Infrastructure

The winning bidder shall provide virtualized infrastructure for the university applications and other essential IT systems, and database.

5.1 Server Switch

The winning bidder shall supply 2 Leaf switch where the server computers will be directly connected and 2 Spine switch for university elected by MPSU to house its disaster recovery infrastructure It shall include 56 pcs SR transceivers and services for configuration and integration.

5.1.1 Must have high-performance of at least:

5.1.1.1.1 1.28Tbps and 952 Mpps for Spine

5.1.1.1.2 1.76Tbps and 1,309 Mpps for Leaf

5.1.1.2 Must have intelligent monitoring and visibility with network analytics

5.1.1.3 Must have high availability with industry leading VSX redundancy, and redundant power supplies and fans

5.1.1.4 Must be designed for core/aggregation in the Top of Rack or End of Row in data center environments

5.1.1.5 Must have automation and programmability using built-in REST APIs and Python scripts

5.1.1.6 Must be capable of advanced Layer 2/3 feature set includes BGP, OSPF, VRF, and IPv6

5.1.2 Quality of Service (QoS)

5.1.2.1 Must be capable of enabling congestion avoidance

5.1.2.2 Must support lossless Ethernet networking standards to eliminate packet loss due to queue overflow

5.1.2.3 Must have Priority Flow Control (PFC) 2 priorities per port

5.1.2.4 Must have Enhanced Transmission Service (ETS)

5.1.2.5 Must be able to prevent accumulation of excessive congestion with periodic flushing. Avoids packets buffering for an extended time period

5.1.3 Resiliency and high availability

5.1.3.1 Must be redundant and have load-sharing fans and power supplies - Increases total performance and power availability while providing hitless, stateful failover

5.1.3.2 Must have hot swappable power supply and fan modules - Allows replacement of accessory modules without any operational impact on other modules nor the switch operations

5.1.3.3 Must have separate data and control paths - Separates control from services and keeps service processing isolated; increases security and performance

5.1.3.4 Must be capable of Virtual Router Redundancy Protocol (VRRP)-VRRP allows a group of switches to dynamically back each other up to create highly available routed environments

5.1.3.5 Must have IEEE 802.3ad LACP - Supports up to 52 LAGs, with up to 8 members per LAG with a user-selectable L1- 4 hashing algorithm

5.1.4 Performance

5.1.4.1 Must have scalable system design - Provides investment protection to support future technologies and higher-speed connectivity

5.1.4.2 Must have high-speed fully distributed architecture - Provides up to 1.76Tbps for bidirectional switching and 1,309 Mpps for forwarding to meet the demands of bandwidth- intensive applications today and in the future

5.1.5 Connectivity

5.1.5.1 Must support port configuration below.

5.1.5.1.1 Spine. 24 ports of 1GbE/10GbE (SFP/SFP+) 4 ports of 40GbE/100GbE (QSFP+/ QSFP28)

5.1.5.1.2 Leaf. 48 ports of 1GbE/10GbE (SFP/SFP+) 4 ports of 40GbE/100GbE (QSFP+/ QSFP28)

5.1.5.2 Must support Jumbo frames - Allows high-performance backups and disaster-recovery systems; provides a maximum frame size of 9K bytes

5.1.5.3 Must have Loopback - Supports internal loopback testing for maintenance purposes and increased availability; loopback detection protects against incorrect cabling or network configurations and can be enabled on a per-port or per-VLAN basis for added flexibility

5.1.5.4 Must have packet storm protection - Protects against unknown broadcast, multicast, or unicast storms with user-defined thresholds

5.1.6 Management

5.1.6.1 Must have management interface control - Enables or disables each of the following interfaces depending on security preferences: console port or reset button

5.1.6.2 Must have industry-standard CLI with a hierarchical structure - Reduces training time and expenses, and increases productivity in multivendor installations

5.1.6.3 Must have management security - Restricts access to critical configuration commands; offers multiple privilege levels with password protection; ACLs provide SNMP access; local and remote Syslog capabilities allow logging of all access

5.1.6.4 Must have IP SLA - Monitors the network for degradation of various services, including voice. Monitoring is enabled via the NAE for history and for immediate automated gathering of additional information when anomalies are detected

5.1.6.5 Must support SNMP v2c/v3 - Provides SNMP read and trap support of industry standard Management Information Base (MIB), and private extensions

5.1.6.6 Must support sFlow (RFC 3176) - Provides scalable ASIC-based wire-speed network monitoring and accounting with no impact on network performance; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes

5.1.6.7 Must have Remote Monitoring (RMON) - Uses standard SNMP to monitor essential network functions and supports events, alarms, history, and statistics groups as well as a private alarm extension group

5.1.6.8 Must support TFTP and SFTP - Offers different mechanisms for configuration updates; trivial FTP (TFTP) allows bidirectional transfers over a TCP/ IP network ; Secure File Transfer Protocol (SFTP) runs over an SSH tunnel to provide additional security

5.1.6.9 Must have debug and sampler utility - Supports ping and traceroute for IPv4 and IPv6

5.1.6.10 Must support Network Time Protocol (NTP) - Synchronizes timekeeping among distributed time servers and clients; keeps timekeeping consistent among all clock- dependent devices within the network; Can serve as the NTP server in a customer network

5.1.6.11 Must have IEEE 802.1AB Link Layer Discovery Protocol (LLDP) - Advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications

5.1.6.12 Must have dual flash images - Provides independent primary and secondary operating system files for backup while upgrading

5.1.6.13 Must support multiple configuration files - Stores files easily to the flash image

5.1.7 Layer 2 Switching

5.1.7.1 Must have VLAN that supports up to 1,024 port-based or IEEE 802.1Q-based VLANs

5.1.7.2 Must have Bridge Protocol Data Unit (BPDU) tunneling - Transmits STP BPDUs transparently, allowing correct tree calculations across service providers, WANs, or MANs

5.1.7.3 Must support port mirroring - Duplicates port traffic (ingress and egress) to a local or remote monitoring port; supports 4 mirroring groups, with an unlimited number of ports per group

5.1.7.4 Must support STP - standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)

5.1.7.5 Must support Internet Group Management Protocol (IGMP) - Controls and manages the flooding of multicast packets in a Layer 2 network

5.1.7.6 Must support Rapid Per-VLAN spanning tree plus (RPVST+) - Allows each VLAN to build a separate spanning tree to improve link bandwidth usage in network environments with multiple VLANs

5.1.8 Layer 3 Services and Routing

5.1.8.1 Must support Address Resolution Protocol (ARP) - Determines the MAC address of another IP host in the same subnet; supports static ARPs ;Gratuitous ARP allows detection of duplicate IP addresses; Proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network

5.1.8.2 Must support Dynamic Host Configuration Protocol (DHCP) - DHCP services are offered within a client network to simplify network management. DHCP Relay enables DHCP operation across subnets

5.1.8.3 Must support Domain Name System (DNS) - Provides a distributed database that translates domain names and IP addresses, which simplifies network design; supports client and server

5.1.8.4 Must support Policy Based Routing (PBR) - Enables use of a classifier to select traffic that can be forwarded based on policy set by the network administrator

5.1.8.5 Must support Static IPv6 routing - Provides simple manually configured IPv6 routing

5.1.8.6 Must support Open shortest path first (OSPF) - Delivers faster convergence; uses link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery

5.1.8.7 Must support Border Gateway Protocol 4 (BGP-4) - Delivers an implementation of the Exterior Gateway Protocol (EGP) utilizing path vectors; uses TCP for enhanced reliability for the route discovery process; reduces bandwidth consumption by advertising only incremental updates; supports extensive policies for increased flexibility; scales to very large networks

5.1.8.8 Must support 6in4 tunnels - tunneling of IPv6 traffic in an IPv4 network

5.1.8.9 Must support IP performance optimization - Provides a set of tools to improve the performance of IPv4 networks; includes directed broadcasts, customization of TCP parameters, support of ICMP error packets, and extensive display capabilities

5.1.8.10 Must support Static IPv6 routing - Provides simple manually configured IPv6 routing

5.1.8.11 Must support OSPFv3 - Provides OSPF support for IPv6

5.1.8.12 Must support Equal-Cost Multipath (ECMP) - Enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth

5.1.8.13 Must support Generic Routing Encapsulation (GRE) - enables tunneling traffic from site to site over a Layer 3 path

5.1.9 Security

5.1.9.1 Must support Access Control List (ACL) Features - powerful ACLs for both IPv4 and IPv6. Supports creation of object groups representing sets of devices like IP addresses. For instance, IT management devices could be grouped in this way; ACLs can also protect control plane services such as SSH, SNMP, NTP or web servers

5.1.9.2 Must support Remote Authentication Dial-In User Service (RADIUS) - Eases security access administration by using a password authentication server

5.1.9.3 Must support Terminal Access Controller Access Control System (TACACS+) - Delivers an authentication tool using TCP with encryption of the full authentication request, providing additional security

5.1.9.4 Must support management access security - provides both on-box as well as off-box authentication for administrative access. RADIUS or TACACS+ can be used to provide encrypted user authentication; Additionally, TACACS+ can also provide user authorization, services

5.1.9.5 Must support Secure shell (SSHv2) - Uses external servers to securely log in to a remote device; with authentication and encryption, it protects against IP spoofing and plain-text password interception; increases the security of Secure FTP (SFTP) transfers

5.1.10 Multicast

5.1.10.1 Must support Multicast Internet Group Management Protocol (IGMP) - Enables establishing multicast group memberships in IPv4 networks; supports IGMPv1, v2, and v3

5.1.10.2 Must support Multicast Listener Discovery (MLD) - Enables discovery of IPv6 multicast listeners; supports MLDv1 and v2

5.1.10.3 Must support Protocol Independent Multicast (PIM) - Protocol Independent Multicast for IPv4 and IPv6 supports one-to-many and many-to-many media casting use cases such as IPTV over IPv4 and IPv6 networks. Support for PIM Sparse Mode (PIM-SM, IPv4 and IPv6)

5.1.11 56 units of Short Range 10G Transceivers

5.2 50TB Enterprise NAS with the minimum following specifications:

5.2.1 NAS Scale-out of up to 12 arrays

5.2.1.1 Maximum Drives (HDD/SSD) of up to 864 or higher

5.2.1.2 Maximum Raw Capacity of up to 13.8PB or hgiher

5.2.1.3 Maximum onboard Flash Cache Based on NVMe Technology of up to 12TB or higher

5.2.1.4 Maximum Flash Pool of up to 144TB or higher

5.2.1.5 Maximum Memory of up to 768GB or higher

5.2.1.6 Maximum Drives (HDD/SSD) of up to 72 or higher

5.2.1.7 Maximum Raw Capacity of up to 1PB or higher

5.2.1.8 Maximum Onboard Flash Cache Based on NVMe Technology of up to 1TB or higher

5.2.1.9 Maximum Flash Pool of up to 12TB of higher

5.2.1.10 Minimum of ECC Memory of up to 64GB

5.2.1.11 At least NVRAM 4GB

5.2.1.12 With Onboard I/O of UTA 2 (8Gb/16Gb FC, 1GbE/10GbE/25GbE)

5.2.1.13 Minimum of 4 x 25GbE Ports

5.2.1.14 Minimum of 4 x 10GbE BASE-T Ports (1GbE autoranging) (maximum)

5.2.1.15 With 12Gb / 6Gb SAS Ports (maximum)

5.2.1.16 With Protocols Supported FC, iSCSI, NFS, pNFS, CIFS/SMB, S3

5.2.1.17 With Host/Client Operating Systems Support for Microsoft Windows, Linux, VMware ESXi

5.2.2 3 Years Warranty and Maintenance with Implementation Services

5.3 Compute Nodes for HCI Environment consisting of Six (6) Rack mounted Servers with minimum specifications as follows:

5.3.1 Hardware

5.3.1.1 2 x Intel Xeon Gold processor

5.3.1.2 24 Core per processor

5.3.1.3 24 x 32G DDR4 RDIMM or similar type or equivalent per node

5.3.1.4 4 x Port 10GbE (SFP+)

5.3.1.5 2 x 480 GB system disk per node

5.3.1.6 Total of 60 TB storage capacity for the HCI stack

5.3.1.7 Redundant Power Supply

5.3.2 Software

5.3.2.1 Technology

5.3.2.1.1 Hyper-Converged Infra (HCI) is a software-defined IT infrastructure that virtualizes all the elements of conventional "hardware-defined" systems. HCI includes, at a minimum, virtualized computing (hypervisor) and virtualized SAN (software-defined storage). The HCI must be also capable and ready for network virtualization, network virtual security (Virtual Firewall, Bandwidth Manager etc.) or virtual Load balancing.

5.3.2.1.2 The HCI solution should start with minimum two nodes, and still expandable from two nodes to more nodes directly without redo of implementation or reinitialization of HCI.

5.3.2.1.3 The management platform is integrated and distributed, not relied on a certain virtual machine or physical machine, which is more reliable.

5.3.2.1.4 Do not require installing additional management software after deployment of the hypervisor to achieve basic web-based access to GUI, granular management and easy operation.

5.3.2.1.5 The crucial components for virtualization of compute, storage, networking, network functions, application firewall, application delivery controller, are provided by the same vendor, to ensure scalability and compatibility

5.3.2.1.6 Support correlated security service with intelligent threat detection and response platform to automatically take actions (such as quarantine VM by distributed firewall, take snapshot for VM, etc.,) against malicious activities that are detected by the security platform.

5.3.3 Compute Virtualization

5.3.3.1 Should have High-Availability. In case host fails, all the VMs running on that host can be recovered to another clustered host to ensure business continuity.

5.3.3.2 Backup is built-in by default and support agent-less incremental VM-level backup. For Windows VMs, filelevel recovery must be supported.

5.3.3.3 Should have built-in back-up and support agent-less incremental VM-level back-up. For Windows VMs, file level recovery must be supported without using 3rd Party solutions.

5.3.3.4 Support snapshot consistent group and scheduled snapshots.

5.3.3.5 Able to evaluate performance of virtual machines and hot-add resources (vCPU and vRAM) when they are running out of CPU or memory, minimizing business downtime.

5.3.3.6 Must be ready support module Activated CDP

5.3.3.7 (Continues Data Protection) capable of recording VMs' IOs at an interval as minimum as 1 second, data can be restored at any point of time in the past 3 days for both clusters.

5.3.3.8 AI-Enhanced database performance optimization with built-in self-adaptive performance optimization engine.

5.3.3.9 Support host health monitoring, when a host is deemed

5.3.3.10 unhealthy, it will be put in an unhealthy host list, VM placement and HA failover will avoid using the unhealthy host as a destination. When the host is back to normal, it can be taken out of the unhealthy host list automatically.

5.3.4 Storage Virtualization

5.3.4.1 Support striping function, and support setting different number of strips in units of virtual disks.

5.3.4.2 Support data reconstruction priority adjustment, users able to view the data reconstruction task list information and can click the priority in the operation to prioritize data reconstruction.

5.3.4.3 A full copy of VM's data should be existed on the node where the VM is running on to facilitate faster read and write.

5.3.4.4 Support striping function, and support setting different number of strips in units of virtual disks.

5.3.4.5 Support disk bad sector prediction, scanning and repair to maximize data security.

5.3.4.6 Support storage capacity prediction based on historical usage statistics and consumption behavior.

5.3.4.7 Support disk remaining lifecycle prediction.

5.3.5 Network Virtualization

5.3.5.1 Natively Support deploying virtual routers, virtual switches and firewalls.

5.3.5.2 Built-in distributed firewall to apply granular access control policy between VMs, securing east-west traffic (also known as Micro-segmentation).

5.3.5.3 The virtual router supports high availability. A failed virtual router can be automatically recovered upon host failure, to ensure high availability of routing service.

5.3.5.4 Visualized Network topology can be completed simply by dragging objects and drawing connections via a visualized web-based management panel

5.3.5.4.1 CDP Function

5.3.5.4.1.1 CDP must support recording VMs' IOs at an interval as minimum as 1 second, data can be restored at any point of time in the past 3 days.

5.3.5.4.1.2 CDP must be integrated without additional 3rd party software.

5.3.5.4.1.3 The CDP must be agent-less to avoid any negative impact on VMs' stability and performance.

5.3.5.4.1.4 Support fast browsing files from CDP backups, able to fast retrieve data or files from CDP backups.

5.3.5.4.2 Warranty and support

5.3.5.4.2.1 At least three (3) years software license subscription & upgrade, and technical support 7*24.

5.3.5.4.2.2 Vendor must have direct local support in the Philippines.

5.3.5.4.3 Certification

5.3.5.4.3.1 To ensure the maturity of Hyper-converged Infrastructure solution, the vendor must be CMMI L5 certified.

6 Core Network and Security

6.1 3 units of Next Generation Firewall / SDWAN for Satellite Campuses

The winning bidder shall supply, install and configure 3 units of NGFW / SDWAN with the specifications described below:

6.1.1 Performance and Hardware specifications

6.1.1.1 The system must have the minimum throughput capacity listed below.

6.1.1.1.1 Firewall Inspection at 5.2 Gbps

6.1.1.1.2 Threat Prevention at 3 Gbps

6.1.1.1.3 Application inspection at 3.6 Gbps

6.1.1.1.4 IPS at 3.4 Gbps

6.1.1.1.5 Anti-malware inspection at 2.9 Gbps

6.1.1.1.6 TLS/SSL decryption and inspection (DPI SSL) at 800 Mbps

6.1.1.1.7 VPN at 2.10 Gbps

6.1.1.2 The system must be capable of handling:

6.1.1.2.1 At least 21,000 Connections per second

6.1.1.2.2 Max connections (SPI) of 1,500,000

6.1.1.2.3 Max DPI-SSL Connections of 125,000

6.1.1.2.4 Max connections (DPI) of 500,000

6.1.1.3 The system's interface must include the following interfaces.

6.1.1.3.1 16 x 1GbE

6.1.1.3.2 3 x 10G SFP+

6.1.1.3.3 2 USB 3.0

6.1.1.3.4 1 Console

6.1.1.3.5 1 Management port

6.1.1.4 Storage of at least 64GB M.2 that is expandable up to 256GB

6.1.2 Capabilities and features

6.1.2.1 Must perform stream-based, bi-directional traffic analysis, without proxying or buffering, to uncover intrusion attempts and malware and to identify application traffic regardless of port.

6.1.2.2 Must scan for threats in both inbound and outbound traffic simultaneously to ensure that the network is not used to distribute malware and does not become a launch platform for attacks in case an infected machine is brought inside.

6.1.2.3 Must have proxy-less and non-buffering inspection technology provides ultra-low latency performance for DPI of millions of simultaneous network streams without introducing file and stream size limitations, and can be applied on common protocols as well as raw TCP streams.

6.1.2.4 Must have a single-pass DPI architecture simultaneously scans for malware, intrusions and application identification, drastically reducing DPI latency and ensuring that all threat information is correlated in a single architecture.

6.1.2.5 Must have an engine with the multi-core architecture to provide high DPI throughput and extremely high new session establishment rates to deal with traffic spikes in demanding networks.

6.1.2.6 Must identify and mitigate even the most insidious modern threats, including future Meltdown exploits. Detects and blocks malware that does not exhibit any malicious behavior and hides its weaponry via encryption.

6.1.2.7 Must prevent potentially malicious files from entering the network, files sent to the cloud for analysis can be held at the gateway until a verdict is determined.

6.1.2.8 Must have multi-engine sandbox platform, which includes virtualized sandboxing, full system emulation and hypervisor level analysis technology, executes suspicious code and analyzes behavior, providing comprehensive visibility to malicious activity.

6.1.2.9 Must have a Secure SD-WAN that enables distributed enterprise organizations to build, operate and manage secure, high-performance networks across remote sites for the purpose of sharing data, applications and services using readily-available, low-cost public Internet services without additional license cost.

6.1.2.10 Must have a wizard to automatically configure SDWAN Policy on the firewall.

6.1.2.11 Must displays SD-WAN Performance probes and top connections.

6.1.2.12 All network traffic must be inspected, analyzed and brought into compliance with firewall access policies.

6.1.2.13 Must supports Active/Passive (A/P) with state synchronization. The proposed solution should support Hardware redundancy using only single security license in both primary & secondary appliance

6.1.2.14 Must have block until verdict To prevent potentially malicious files from entering the network, files sent to the cloud for analysis can be held at the gateway until a verdict is determined.

6.1.2.15 Must have zero-day protection to protect the network against zero-day attacks with constant updates against the latest exploit methods and techniques that cover thousands of individual exploits.

6.1.2.16 Must have Bi-directional raw TCP inspection that scans raw TCP streams on any port and bi-directionally to detect and prevent both inbound and outbound threats.

6.1.2.17 Must have application control that controls applications, or individual application features that are identified by the engine against a continuously expanding database of over thousands of application signatures. That increases network security and enhances network productivity.

6.1.2.18 Must have DDoS/DoS attack protection. SYN flood protection provides a defense against DOS attacks using both Layer 3 SYN proxy and Layer 2 SYN blacklisting technologies. Additionally, it protects against DOS/DDoS through UDP/ICMP flood protection and connection rate limiting.

6.1.2.19 Must be capable of load-balances multiple WAN interfaces using Round Robin, Spillover or Percentage methods. Policy-based routing creates routes based on protocol to direct traffic to a preferred WAN connection with the ability to fail back to a secondary WAN in the event of an outage

6.1.2.20 Must display rules which are actively used or not being used.

6.1.2.21 Must be able to simplify and reduce complex distributed firewall deployment down to a trivial effort by automating the initial site-to-site VPN gateway provisioning between firewalls while security and connectivity occurs instantly and automatically.

6.1.2.22 Must guarantee critical communications with 802.1p, DSCP tagging and remapping of VoIP traffic on the network.

6.1.2.23 The system Intrusion Prevention System must be capable of Signature-based scanning, Automatic signature updates, Bi-directional inspection, Granular IPS rule capability, GeoIP enforcement, Botnet filtering with dynamic list, Regular expression matching.

6.1.2.24 The Anti-Malware System must be capable of Stream-based malware scanning, Gateway anti-virus, Gateway anti-spyware, Bi-directional inspection, No file size limitation

6.1.2.25 The system must have traffic visualization that can monitor User activity, application, bandwidth, and threat.

6.1.2.26 Must have a HTTP/HTTPS Web content filtering that is capable of URL filtering, Proxy avoidance, Keyword blocking, Policy-based filtering (exclusion/inclusion), HTTP header insertion, Bandwidth manage, and rating categories.

6.1.2.27 Must have a VPN that is capable of Secure SD-WAN, Auto-provision VPN, IPSec VPN for site-to-site connectivity, SSL VPN and IPSec client remote access, Redundant VPN gateway, and Mobile client for iOS, Mac OS X, Windows, Chrome, Android and Kindle Fire.

6.1.2.28 Must have networking capabilities such as Port Shield, Path MTU discovery, Enhanced logging, VLAN trunking, Layer-2 QoS, Port security, Dynamic routing (RIP/OSPF/BGP), Policy-based routing (ToS/metric and ECMP), NAT, DHCP server, Bandwidth management, A/P high availability with state sync, Inbound/outbound load balancing, L2 bridge, wire/virtual wire mode, tap mode, NAT mode, Asymmetric routing, and Common Access Card (CAC) support.

6.1.2.29 The system management and monitoring must have Web GUI, Command Line Interface (CLI), SNMP v2/v3 support, centralized management and reporting, NetFlow/IP Fix exporting, cloud-based configuration back up, and Zero-Touch registration & provisioning.

6.1.2.30 Must be certified with ICSA labs Advance Threat Defense certified with 100% unknown threat detection for 7 consecutive quarters from Q1-Q4, 2021 & Q1-Q3, 2022.

6.1.2.31 Must have 24x7 support that includes firmware updates and hardware replacement. Support includes around-the-clock access to telephone and web-based support for basic configuration and troubleshooting assistance, as well as hardware replacement in the event of failure.

6.1.3 12 pcs. of Short Range 10G Transceivers

6.2 Next-Generation Firewall / SDWAN for Bontoc Main Campus

The winning bidder shall supply, install and configure 2 units of NGFW with the specifications described below:

6.2.1 Performance and Hardware specifications

6.2.1.1 The system must have the minimum throughput capacity listed below.

6.2.1.1.1 Firewall Inspection at 18 Gbps

6.2.1.1.2 Threat Prevention at 9.5 Gbps

6.2.1.1.3 Application inspection at 11 Gbps

6.2.1.1.4 IPS at 10 Gbps

6.2.1.1.5 Anti-malware inspection at 9.5 Gbps

6.2.1.1.6 TLS/SSL decryption and inspection (DPI SSL) at 5 Gbps

6.2.1.1.7 VPN at 11 Gbps

6.2.2 The system must be capable of handling:

6.2.2.1.1 At least 115,000 Connections per second

6.2.2.1.2 Max connections (SPI) of 4,000,000

6.2.2.1.3 Max DPI-SSL Connections of 350,000

6.2.2.1.4 Max connections (DPI) of 2,000,000

6.2.3 The system's interface must include the following interfaces.

6.2.3.1.1 6 x 10G/5G/2.5G/1G SFP+

6.2.3.1.2 24 x 1GbE Cu

6.2.3.1.3 2 USB 3.0

6.2.3.1.4 1 Console

6.2.3.1.5 1 Management port

6.2.4 Storage of at least 128 GB that is expandable up to 1 TB

6.2.5 Capabilities and Features

6.2.5.1 Must perform stream-based, bi-directional traffic analysis, without proxying or buffering, to uncover intrusion attempts and malware and to identify application traffic regardless of port.

6.2.5.2	Must scan for threats in both inbound and outbound traffic simultaneously to ensure that the network is not used to distribute malware and does not become a launch platform for attacks in case an infected machine is brought inside.
6.2.5.3	Must have proxy-less and non-buffering inspection technology provides ultra-low latency performance for DPI of millions of simultaneous network streams without introducing file and stream size limitations, and can be applied on common protocols as well as raw TCP streams.
6.2.5.4	Must have a single-pass DPI architecture simultaneously scans for malware, intrusions and application identification, drastically reducing DPI latency and ensuring that all threat information is correlated in a single architecture.
6.2.5.5	Must have an engine with the multi-core architecture to provide high DPI throughput and extremely high new session establishment rates to deal with traffic spikes in demanding networks.
6.2.5.6	Must identify and mitigate even the most insidious modern threats, including future Meltdown exploits. Detects and blocks malware that does not exhibit any malicious behavior and hides its weaponry via encryption.
6.2.5.7	Must prevent potentially malicious files from entering the network, files sent to the cloud for analysis can be held at the gateway until a verdict is determined.
6.2.5.8	Must have multi-engine sandbox platform, which includes virtualized sandboxing, full system emulation and hypervisor level analysis technology, executes suspicious code and analyzes behavior, providing comprehensive visibility to malicious activity.
6.2.5.9	Must have a Secure SD-WAN that enables distributed enterprise organizations to build, operate and manage secure, high-performance networks across remote sites for the purpose of sharing data, applications and services using readily-available, low-cost public Internet services without additional license cost.
6.2.5.10	Must have a wizard to automatically configure SDWAN Policy on the firewall
6.2.5.11	Must displays SD-WAN Performance probes and top connections.
6.2.5.12	All network traffic must be inspected, analyzed and brought into compliance with firewall access policies.
6.2.5.13	Must supports Active/Passive (A/P) with state synchronization. The proposed solution should support Hardware redundancy using only single security license in both primary & secondary appliance
6.2.5.14	Must have block until verdict to prevent potentially malicious files from entering the network, files sent to the cloud for analysis can be held at the gateway until a verdict is determined.
6.2.5.15	Must have zero-day protection to protect the network against zero-day attacks with constant updates against the latest exploit methods and techniques that cover thousands of individual exploits.
6.2.5.16	Must have Bi-directional raw TCP inspection that scans raw TCP streams on any port and bi-directionally to detect and prevent both inbound and outbound threats.

6.2.5.17 Must have application control that controls applications, or individual application features that are identified by the engine against a continuously expanding database of over thousands of application signatures. That increases network security and enhances network productivity.

6.2.5.18 Must have DDoS/DoS attack protection. SYN flood protection provides a defense against DOS attacks using both Layer 3 SYN proxy and Layer 2 SYN blacklisting technologies. Additionally, it protects against DOS/DDoS through UDP/ICMP flood protection and connection rate limiting.zdfbn cx

6.2.5.19 Must be capable of load-balances multiple WAN interfaces using Round Robin, Spillover or Percentage methods. Policy-based routing creates routes based on protocol to direct traffic to a preferred WAN connection with the ability to fail back to a secondary WAN in the event of an outage

6.2.5.20 Must display rules which are actively used or not being used.

6.2.5.21 Must be able to simplify and reduce complex distributed firewall deployment down to a trivial effort by automating the initial site-to-site VPN gateway provisioning between firewalls while security and connectivity occurs instantly and automatically.

6.2.5.22 Must guarantee critical communications with 802.1p, DSCP tagging and remapping of VoIP traffic on the network.

6.2.5.23 The system Intrusion Prevention System must be capable of Signature-based scanning, Automatic signature updates, Bi-directional inspection, Granular IPS rule capability, GeoIP enforcement, Botnet filtering with dynamic list, Regular expression matching.

6.2.5.24 The Anti-Malware System must be capable of Stream-based malware scanning, Gateway anti-virus, Gateway anti-spyware, Bi-directional inspection, No file size limitation

6.2.5.25 The system must have traffic visualization that can monitor User activity, application, bandwidth, and threat.

6.2.5.26 Must have a HTTP/HTTPS Web content filtering that is capable of URL filtering, Proxy avoidance, Keyword blocking, Policy-based filtering (exclusion/inclusion), HTTP header insertion, Bandwidth manage, and rating categories.

6.2.5.27 Must have a VPN that is capable of Secure SD-WAN, Auto-provision VPN, IPSec VPN for site-to-site connectivity, SSL VPN and IPSec client remote access, Redundant VPN gateway, and Mobile client for iOS, Mac OS X, Windows, Chrome, Android and Kindle Fire.

6.2.5.28 Must have networking capabilities such as PortShield, Path MTU discovery, Enhanced logging, VLAN trunking, Layer-2 QoS, Port security, Dynamic routing (RIP/OSPF/BGP), Policy-based routing (ToS/metric and ECMP), NAT, DHCP server, Bandwidth management, A/P high availability with state sync, Inbound/outbound load balancing, L2 bridge, wire/virtual wire mode, tap mode, NAT mode, Asymmetric routing, and Common Access Card (CAC) support.

6.2.5.29 The system management and monitoring must have Web GUI, Command Line Interface (CLI), SNMP v2/v3 support, centralized management and reporting, NetFlow/IP Fix exporting, cloud-based configuration back up, and Zero-Touch registration & provisioning.

6.2.5.30 Must be certified with ICSA labs Advance Threat Defense certified with 100% unknown threat detection for 7 consecutive quarters from Q1-Q4, 2021 & Q1-Q3, 2022.

6.2.6 Must have 24x7 support that includes firmware updates and hardware replacement. Support includes around-the-clock access to telephone and web-based support for basic configuration and troubleshooting assistance, as well as hardware replacement in the event of failure.

6.2.7 8 pcs. of Short Range 10G Transceivers

6.3 Core Switch

The winning bidder shall supply, install and configure 2 units of Core Switch with a total of 26 pcs SR transceivers for the 2 switches. Please see the specifications as described below.

6.3.1 Must have high-performance of at least:

6.3.1.1 1.76Tbps and 1,309 Mpps

6.3.1.2 Must have intelligent monitoring and visibility with network analytics

6.3.1.3 Must have high availability with industry leading VSX redundancy, and redundant power supplies and fans

6.3.1.4 Must be designed for core/aggregation in the Top of Rack or End of Row in data center environments

6.3.1.5 Must have automation and programmability using built-in REST APIs and Python scripts

6.3.1.6 Must be capable of advanced Layer 2/3 feature set includes BGP, OSPF, VRF, and IPv6

6.3.2 Quality of Service (QoS)

6.3.2.1 Must be capable of enabling congestion avoidance

6.3.2.2 Must support lossless Ethernet networking standards to eliminate packet loss due to queue overflow

6.3.2.3 Must have Priority Flow Control (PFC) 2 priorities per port

6.3.2.4 Must have Enhanced Transmission Service (ETS)

6.3.2.5 Must be able to prevent accumulation of excessive congestion with periodic flushing. Avoids packets buffering for an extended time period

6.3.3 Resiliency and high availability

6.3.3.1 Must be redundant and have load-sharing fans and power supplies - Increases total performance and power availability while providing hitless, stateful failover

6.3.3.2 Must have hot swappable power supply and fan modules - Allows replacement of accessory modules without any operational impact on other modules nor the switch operations

6.3.3.3 Must have separate data and control paths - Separates control from services and keeps service processing isolated; increases security and performance

6.3.3.4 Must be capable of Virtual Router Redundancy Protocol (VRRP)-VRRP allows a group of switches to dynamically back each other up to create highly available routed environments

6.3.3.5 Must have IEEE 802.3ad LACP - Supports up to 52 LAGs, with up to 8 members per LAG with a user-selectable L1- 4 hashing algorithm

6.3.4 Performance

6.3.4.1 Must have scalable system design - Provides investment protection to support future technologies and higher-speed connectivity

6.3.4.2 Must have high-speed fully distributed architecture - Provides up to 1.76Tbps for bidirectional switching and 1,309 Mpps for forwarding to meet the demands of bandwidth- intensive applications today and in the future

6.3.5 Connectivity

6.3.5.1 Must support port configuration below.

6.3.5.2 48 ports of 1GbE/10GbE (SFP/SFP+) 4 ports of 40GbE/100GbE (QSFP+/ QSFP28)

6.3.5.3 Must support Jumbo frames - Allows high-performance backups and disaster-recovery systems; provides a maximum frame size of 9K bytes

6.3.5.4 Must have Loopback - Supports internal loopback testing for maintenance purposes and increased availability; loopback detection protects against incorrect cabling or network configurations and can be enabled on a per-port or per-VLAN basis for added flexibility

6.3.5.5 Must have packet storm protection - Protects against unknown broadcast, multicast, or unicast storms with user-defined thresholds

6.3.6 Management

6.3.6.1 Must have management interface control - Enables or disables each of the following interfaces depending on security preferences: console port or reset button

6.3.6.2 Must have industry-standard CLI with a hierarchical structure - Reduces training time and expenses, and increases productivity in multivendor installations

6.3.6.3 Must have management security - Restricts access to critical configuration commands; offers multiple privilege levels with password protection; ACLs provide SNMP access; local and remote Syslog capabilities allow logging of all access

6.3.6.4 Must have IP SLA - Monitors the network for degradation of various services, including voice. Monitoring is enabled via the NAE for history and for immediate automated gathering of additional information when anomalies are detected

6.3.6.5 Must support SNMP v2c/v3 - Provides SNMP read and trap support of industry standard Management Information Base (MIB), and private extensions

6.3.6.6 Must support sFlow (RFC 3176) - Provides scalable ASIC-based wire-speed network monitoring and accounting with no impact on network performance; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes

6.3.6.7 Must have Remote Monitoring (RMON) - Uses standard SNMP to monitor essential network functions and supports events, alarms, history, and statistics groups as well as a private alarm extension group

6.3.6.8 Must support TFTP and SFTP - Offers different mechanisms for configuration updates; trivial FTP (TFTP) allows bidirectional transfers over a TCP/ IP network ; Secure File Transfer Protocol (SFTP) runs over an SSH tunnel to provide additional security

6.3.6.9 Must have debug and sampler utility - Supports ping and traceroute for IPv4 and IPv6

6.3.6.10 Must support Network Time Protocol (NTP) - Synchronizes timekeeping among distributed time servers and clients; keeps timekeeping consistent among all clock- dependent devices within the network; Can serve as the NTP server in a customer network

6.3.6.11 Must have IEEE 802.1AB Link Layer Discovery Protocol (LLDP) - Advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications

6.3.6.12 Must have dual flash images - Provides independent primary and secondary operating system files for backup while upgrading

6.3.6.13 Must support multiple configuration files - Stores files easily to the flash image

6.3.7 Layer 2 Switching

6.3.7.1 Must have VLAN that supports up to 1,024 port-based or IEEE 802.1Q-based VLANs

6.3.7.2 Must have Bridge Protocol Data Unit (BPDU) tunneling - Transmits STP BPDUs transparently, allowing correct tree calculations across service providers, WANs, or MANs

6.3.7.3 Must support port mirroring - Duplicates port traffic (ingress and egress) to a local or remote monitoring port; supports 4 mirroring groups, with an unlimited number of ports per group

6.3.7.4 Must support STP - standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)

6.3.7.5 Must support Internet Group Management Protocol (IGMP) - Controls and manages the flooding of multicast packets in a Layer 2 network

6.3.7.6 Must support Rapid Per-VLAN spanning tree plus (RPVST+) - Allows each VLAN to build a separate spanning tree to improve link bandwidth usage in network environments with multiple VLANs

6.3.8 Layer 3 Services and Routing

6.3.8.1 Must support Address Resolution Protocol (ARP) - Determines the MAC address of another IP host in the same subnet; supports static ARPs ;Gratuitous ARP allows detection of duplicate IP addresses; Proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network

6.3.8.2 Must support Dynamic Host Configuration Protocol (DHCP) - DHCP services are offered within a client network to simplify network management. DHCP Relay enables DHCP operation across subnets

6.3.8.3 Must support Domain Name System (DNS) - Provides a distributed database that translates domain names and IP addresses, which simplifies network design; supports client and server

6.3.8.4 Must support Policy Based Routing (PBR) - Enables use of a classifier to select traffic that can be forwarded based on policy set by the network administrator

6.3.8.5 Must support Static IPv6 routing - Provides simple manually configured IPv6 routing

6.3.8.6 Must support Open shortest path first (OSPF) - Delivers faster convergence; uses link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery

6.3.8.7 Must support Border Gateway Protocol 4 (BGP-4) - Delivers an implementation of the Exterior Gateway Protocol (EGP) utilizing path vectors; uses TCP for enhanced reliability for the route discovery process; reduces bandwidth consumption by advertising only incremental updates; supports extensive policies for increased flexibility; scales to very large networks

6.3.8.8 Must support 6in4 tunnels - tunneling of IPv6 traffic in an IPv4 network

6.3.8.9 Must support IP performance optimization - Provides a set of tools to improve the performance of IPv4 networks; includes directed broadcasts, customization of TCP parameters, support of ICMP error packets, and extensive display capabilities

6.3.8.10 Must support Static IPv6 routing - Provides simple manually configured IPv6 routing

6.3.8.11 Must support OSPFv3 - Provides OSPF support for IPv6

6.3.8.12 Must support Equal-Cost Multipath (ECMP) - Enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth

6.3.8.13 Must support Generic Routing Encapsulation (GRE) - enables tunneling traffic from site to site over a Layer 3 path

6.3.9 Security

6.3.9.1 Must support Access Control List (ACL) Features - powerful ACLs for both IPv4 and IPv6. Supports creation of object groups representing sets of devices like IP addresses. For instance, IT management devices could be grouped in this way; ACLs can also protect control plane services such as SSH, SNMP, NTP or web servers

6.3.9.2 Must support Remote Authentication Dial-In User Service (RADIUS) - Eases security access administration by using a password authentication server

6.3.9.3 Must support Terminal Access Controller Access Control System (TACACS+) - Delivers an authentication tool using TCP with encryption of the full authentication request, providing additional security

6.3.9.4 Must support management access security - provides both on-box as well as off-box authentication for administrative access. RADIUS or TACACS+ can be used to provide encrypted user authentication; Additionally, TACACS+ can also provide user authorization, services

6.3.9.5 Must support Secure shell (SSHv2) - Uses external servers to securely log in to a remote device; with authentication and encryption, it protects against IP spoofing and plain-text password interception; increases the security of Secure FTP (SFTP) transfers

6.3.10 Multicast

6.3.10.1 Must support Multicast Internet Group Management Protocol (IGMP) - Enables establishing multicast group memberships in IPv4 networks; supports IGMPv1, v2, and v3

6.3.10.2 Must support Multicast Listener Discovery (MLD) - Enables discovery of IPv6 multicast listeners; supports MLDv1 and v2

6.3.10.3 Must support Protocol Independent Multicast (PIM) - Protocol Independent Multicast for IPv4 and IPv6 supports one-to-many and many-to-many media casting use cases such as IPTV over IPv4 and IPv6 networks. Support for PIM Sparse Mode (PIM-SM, IPv4 and IPv6)

6.3.11 26 units of Short Range 10G Transceivers

6.4 Distribution Switch

The winning bidder shall supply, install and configure 2 units of Distribution Switch and a total of 22 pcs SR transceivers for all 2 switches with the specifications described below:

6.4.1 Must have high-performance of at least:

6.4.1.1 1.76Tbps and 1,309 Mpps

6.4.1.2 Must have intelligent monitoring and visibility with network analytics

6.4.1.3 Must have high availability with industry leading VSX redundancy, and redundant power supplies and fans

6.4.1.4 Must be designed for core/aggregation in the Top of Rack or End of Row in data center environments

6.4.1.5 Must have automation and programmability using built-in REST APIs and Python scripts

6.4.1.6 Must be capable of advanced Layer 2/3 feature set includes BGP, OSPF, VRF, and IPv6

6.4.2 Quality of Service (QoS)

6.4.2.1 Must be capable of enabling congestion avoidance

6.4.2.2 Must support lossless Ethernet networking standards to eliminate packet loss due to queue overflow

6.4.2.3 Must have Priority Flow Control (PFC) 2 priorities per port

6.4.2.4 Must have Enhanced Transmission Service (ETS)

6.4.2.5 Must be able to prevent accumulation of excessive congestion with periodic flushing. Avoids packets buffering for an extended time period

6.4.3 Resiliency and high availability

6.4.3.1 Must be redundant and have load-sharing fans and power supplies - Increases total performance and power availability while providing hitless, stateful failover

6.4.3.2 Must have hot swappable power supply and fan modules - Allows replacement of accessory modules without any operational impact on other modules nor the switch operations

6.4.3.3 Must have separate data and control paths - Separates control from services and keeps service processing isolated; increases security and performance

6.4.3.4 Must be capable of Virtual Router Redundancy Protocol (VRRP)-VRRP allows a group of switches to dynamically back each other up to create highly available routed environments

6.4.3.5 Must have IEEE 802.3ad LACP - Supports up to 52 LAGs, with up to 8 members per LAG with a user-selectable L1- 4 hashing algorithm

6.4.4 Performance

6.4.4.1 Must have scalable system design - Provides investment protection to support future technologies and higher-speed connectivity

6.4.4.2 Must have high-speed fully distributed architecture - Provides up to 1.76Tbps for bidirectional switching and 1,309 Mpps for forwarding to meet the demands of bandwidth- intensive applications today and in the future

6.4.5 Connectivity

6.4.5.1 Must support port configuration below.

6.4.5.2 48 ports of 1GbE/10GbE (SFP/SFP+) 4 ports of 40GbE/100GbE (QSFP+/ QSFP28)

6.4.5.3 Must support Jumbo frames - Allows high-performance backups and disaster-recovery systems; provides a maximum frame size of 9K bytes

6.4.5.4 Must have Loopback - Supports internal loopback testing for maintenance purposes and increased availability; loopback detection protects against incorrect cabling or network configurations and can be enabled on a per-port or per-VLAN basis for added flexibility

6.4.5.5 Must have packet storm protection - Protects against unknown broadcast, multicast, or unicast storms with user-defined thresholds

6.4.6 Management

6.4.6.1 Must have management interface control - Enables or disables each of the following interfaces depending on security preferences: console port or reset button

6.4.6.2 Must have industry-standard CLI with a hierarchical structure - Reduces training time and expenses, and increases productivity in multivendor installations

6.4.6.3 Must have management security - Restricts access to critical configuration commands; offers multiple privilege levels with password protection; ACLs provide SNMP access; local and remote Syslog capabilities allow logging of all access

6.4.6.4 Must have IP SLA - Monitors the network for degradation of various services, including voice. Monitoring is enabled via the NAE for history and for immediate automated gathering of additional information when anomalies are detected

6.4.6.5 Must support SNMP v2c/v3 - Provides SNMP read and trap support of industry standard Management Information Base (MIB), and private extensions

6.4.6.6 Must support sFlow (RFC 3176) - Provides scalable ASIC-based wire-speed network monitoring and accounting with no impact on network performance; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes

6.4.6.7 Must have Remote Monitoring (RMON) - Uses standard SNMP to monitor essential network functions and supports events, alarms, history, and statistics groups as well as a private alarm extension group

6.4.6.8 Must support TFTP and SFTP - Offers different mechanisms for configuration updates; trivial FTP (TFTP) allows bidirectional transfers over a TCP/ IP network ; Secure File Transfer Protocol (SFTP) runs over an SSH tunnel to provide additional security

6.4.6.9 Must have debug and sampler utility - Supports ping and traceroute for IPv4 and IPv6

6.4.6.10 Must support Network Time Protocol (NTP) - Synchronizes timekeeping among distributed time servers and clients; keeps timekeeping consistent among all clock- dependent devices within the network; Can serve as the NTP server in a customer network

6.4.6.11 Must have IEEE 802.1AB Link Layer Discovery Protocol (LLDP) - Advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications

6.4.6.12 Must have dual flash images - Provides independent primary and secondary operating system files for backup while upgrading

6.4.6.13 Must support multiple configuration files - Stores files easily to the flash image

6.4.7 Layer 2 Switching

6.4.7.1 Must have VLAN that supports up to 1,024 port-based or IEEE 802.1Q-based VLANs

6.4.7.2 Must have Bridge Protocol Data Unit (BPDU) tunneling - Transmits STP BPDUs transparently, allowing correct tree calculations across service providers, WANs, or MANs

6.4.7.3 Must support port mirroring - Duplicates port traffic (ingress and egress) to a local or remote monitoring port; supports 4 mirroring groups, with an unlimited number of ports per group

6.4.7.4 Must support STP - standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)

6.4.7.5 Must support Internet Group Management Protocol (IGMP) - Controls and manages the flooding of multicast packets in a Layer 2 network

6.4.7.6 Must support Rapid Per-VLAN spanning tree plus (RPVST+) - Allows each VLAN to build a separate spanning tree to improve link bandwidth usage in network environments with multiple VLANs

6.4.8 Layer 3 Services and Routing

6.4.8.1 Must support Address Resolution Protocol (ARP) - Determines the MAC address of another IP host in the same subnet; supports static ARPs ;Gratuitous ARP allows detection of duplicate IP addresses; Proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network

6.4.8.2 Must support Dynamic Host Configuration Protocol (DHCP) - DHCP services are offered within a client network to simplify network management. DHCP Relay enables DHCP operation across subnets

6.4.8.3 Must support Domain Name System (DNS) - Provides a distributed database that translates domain names and IP addresses, which simplifies network design; supports client and server

6.4.8.4 Must support Policy Based Routing (PBR) - Enables use of a classifier to select traffic that can be forwarded based on policy set by the network administrator

6.4.8.5 Must support Static IPv6 routing - Provides simple manually configured IPv6 routing

6.4.8.6 Must support Open shortest path first (OSPF) - Delivers faster convergence; uses link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery

6.4.8.7 Must support Border Gateway Protocol 4 (BGP-4) - Delivers an implementation of the Exterior Gateway Protocol (EGP) utilizing path vectors; uses TCP for enhanced reliability for the route discovery process; reduces bandwidth consumption by advertising only incremental updates; supports extensive policies for increased flexibility; scales to very large networks

6.4.8.8 Must support 6in4 tunnels - tunneling of IPv6 traffic in an IPv4 network

6.4.8.9 Must support IP performance optimization - Provides a set of tools to improve the performance of IPv4 networks; includes directed broadcasts, customization of TCP parameters, support of ICMP error packets, and extensive display capabilities

6.4.8.10 Must support Static IPv6 routing - Provides simple manually configured IPv6 routing

6.4.8.11 Must support OSPFv3 - Provides OSPF support for IPv6

6.4.8.12 Must support Equal-Cost Multipath (ECMP) - Enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth

6.4.8.13 Must support Generic Routing Encapsulation (GRE) - enables tunneling traffic from site to site over a Layer 3 path

6.4.9 Security

6.4.9.1 Must support Access Control List (ACL) Features - powerful ACLs for both IPv4 and IPv6. Supports creation of object groups representing sets of devices like IP addresses. For instance, IT management devices could be grouped in this way; ACLs can also protect control plane services such as SSH, SNMP, NTP or web servers

6.4.9.2 Must support Remote Authentication Dial-In User Service (RADIUS) - Eases security access administration by using a password authentication server

6.4.9.3 Must support Terminal Access Controller Access Control System (TACACS+) - Delivers an authentication tool using TCP with encryption of the full authentication request, providing additional security

6.4.9.4 Must support management access security - provides both on-box as well as off-box authentication for administrative access. RADIUS or TACACS+ can be used to provide encrypted user authentication; Additionally, TACACS+ can also provide user authorization, services

6.4.9.5 Must support Secure shell (SSHv2) - Uses external servers to securely log in to a remote device; with authentication and encryption, it protects against IP spoofing and plain-text password interception; increases the security of Secure FTP (SFTP) transfers

6.4.10 Multicast

6.4.10.1 Must support Multicast Internet Group Management Protocol (IGMP) - Enables establishing multicast group memberships in IPv4 networks; supports IGMPv1, v2, and v3

6.4.10.2 Must support Multicast Listener Discovery (MLD) - Enables discovery of IPv6 multicast listeners; supports MLDv1 and v2

6.4.10.3 Must support Protocol Independent Multicast (PIM) - Protocol Independent Multicast for IPv4 and IPv6 supports one-to-many and many-to-many media casting use cases such as IPTV over IPv4 and IPv6 networks. Support for PIM Sparse Mode (PIM-SM, IPv4 and IPv6)

6.4.11 22 units of Short-Range Transceivers

6.5 Supply and Installation of 5 units 32 Ports Aggregation Switch with a total of the following specifications on the IDFs per building of 5 target buildings with 1 switch per building.

6.5.1 Performance

6.5.1.1 The switch must have a switching capacity of at least 760 Gbps or equivalent.

6.5.1.2 The switch must have a total non-blocking throughput of at least 380 Gbps or equivalent.

6.5.1.3 The switch must have a forwarding rate of at least 565.44 Mpps or equivalent.

6.5.1.4 The switch must have an operating temperature range of -5 to 40° C (23 to 104° F).

6.5.1.5 The switch must have an operating humidity range of 10 to 90% non-condensing.

6.5.2 Connectivity

6.5.2.1 Must support below configuration

6.5.2.1.1 28 1/10 Gbps SFP+ Ethernet ports

6.5.2.1.2 4 1/10/25 Gbps SFP+ Ethernet ports

6.5.3 Power

6.5.3.1 The switch must be able to support a universal input of 100-240V AC, 50/60 Hz.

6.5.3.2 The switch must be able to support a USP RPS DC input of 52V DC, 11.54A/11.5V DC, 5.22A.

6.5.3.3 The switch must have an internal AC/DC power supply of 100W.

6.5.4 Management

6.5.4.1 The switch must have a 1.3" touchscreen LCM display for AR Switch Management.

6.5.5 Layer 2 Switching

6.5.5.1 Must support the layer 2 features listed but not limited to the following:

6.5.5.2 IGMP snooping

6.5.5.3 STP / RSTP with priorities and port-level disable

6.5.5.4 Port isolation

6.5.5.5 Storm control

6.5.5.6 Voice VLAN

6.5.5.7 Port mirroring

6.5.5.8 LACP port aggregation

6.5.5.9 Multicast / broadcast rate limiting

6.5.5.10 MAC address blocking

6.5.5.11 Flow control

6.5.5.12 802.1X control

6.5.5.13 Jumbo frames

6.5.5.14 DHCP snooping / guarding

6.5.5.15 Egress rate limit

6.5.5.16 LLDP-MED

6.5.5.17 Port restricted by MAC

6.5.5.18 Device isolation with ACLs

6.5.6 Layer 3 Switching

6.5.6.1 Must support the layer 2 features listed but not limited to the following:

6.5.6.1.1 DHCP for locally-managed networks

6.5.6.1.2 DHCP relay

6.5.6.1.3 Inter-VLAN routing between networks on same switch

6.5.6.1.4 Static routing between local networks

6.5.6.1.5 Network isolation with ACLs

6.5.6.1.6 DHCP snooping / guarding

6.5.6.1.7 Egress rate limit

6.5.6.1.8 LLDP-MED

6.5.6.1.9 Port restricted by MAC

6.6 Supply and Installation of a total of 20 units 48 Ports PoE Access Switch with the following specifications on the IDFs per building per floors for 5 targeted buildings:

6.6.1 Performance

6.6.1.1 The switch must have a switching capacity of at least 176 Gbps or equivalent.

6.6.1.2 The switch must have a total non-blocking throughput of at least 88 Gbps or equivalent.

6.6.1.3 The switch must have a forwarding rate of at least 130.944 Mpps or equivalent.

6.6.1.4 The switch must have an operating temperature range of -5 to 40° C (23 to 104° F).

6.6.1.5 The switch must have an operating humidity range of 10 to 90% non-condensing.

6.6.2 Connectivity

6.6.2.1 Must support below configuration

6.6.2.1.1 48 Gigabit Ethernet RJ45 ports

6.6.2.1.2 40 PoE/PoE+ (Pins 1, 2+, 3, 6-)

6.6.2.1.3 8 60W PoE++; PoE/PoE+ (Pins 1, 2+: 3,6-)

6.6.2.1.4 PoE++ (Pair A 1, 2+; 3, 6-) (Pair B 4, 5+, 7, 8-)

6.6.3 Power

6.6.3.1 The switch must be able to support a universal input of 100-240V AC, 50/60 Hz.

6.6.3.2 The switch must be able to support a USP RPS DC input of 52V DC, 11.54A/11.5V DC, 5.22A.

6.6.3.3 The switch must have an internal AC/DC power supply of 660W.

6.6.3.3.1 The switch must have a total PoE power budget of 600W.

6.6.3.3.2 The switch must be able to provide a maximum PoE wattage per port of the following:

6.6.3.3.2.1 32W for PoE+

6.6.3.3.2.2 64W for PoE++.

6.6.3.3.3 The switch must have a voltage range in PoE mode of the following:

6.6.3.3.3.1 44V - 57V for PoE

6.6.3.3.3.2 50V - 57V for PoE+.

6.6.3.3.4 48 Gigabit Ethernet RJ45 ports

6.6.3.4 The switch must have a maximum power consumption of 60W (excluding PoE output).

6.6.4 Management

6.6.4.1 The switch must have a 1.3" touchscreen LCM display for AR Switch Management.

6.6.5 Layer 2 Switching

6.6.5.1 Must support the layer 2 features listed but not limited to the following:

6.6.5.1.1 IGMP snooping

6.6.5.1.2 STP / RSTP with priorities and port-level disable

6.6.5.1.3 Port isolation

6.6.5.1.4 Storm control

6.6.5.1.5 Voice VLAN

6.6.5.1.6 Port mirroring

6.6.5.1.7 LACP port aggregation

6.6.5.1.8 Multicast / broadcast rate limiting

6.6.5.1.9 MAC address blocking

6.6.5.1.10 Flow control

6.6.5.1.11 802.1X control

6.6.5.1.12 Jumbo frames

6.6.5.1.13 DHCP snooping / guarding

6.6.5.1.14 Egress rate limit

6.6.5.1.15 LLDP-MED

6.6.5.1.16 Port restricted by MAC

6.6.5.1.17 Device isolation with ACLs

6.6.6 Layer 3 Switching

6.6.6.1 Must support the layer 2 features listed but not limited to the following:

6.6.6.1.1 DHCP for locally-managed networks

6.6.6.1.2 DHCP relay

6.6.6.1.3 Inter-VLAN routing between networks on same switch

6.6.6.1.4 Static routing between local networks

6.6.6.1.5 Network isolation with ACLs

6.6.6.1.6 DHCP snooping / guarding

6.6.6.1.7 Egress rate limit

6.6.6.1.8 LLDP-MED

6.6.6.1.9 Port restricted by MAC

6.7 Supply and Installation of 170 Indoor Access Points across several campuses with the following specifications:

6.7.1 Quantity and Location: in-building installation, Main Campus

6.7.1.1 Access Point shall support an aggregate radio rate of up to or equivalent or higher of the following:

6.7.1.1.1 6 Ghz (2x2 DL/UL MU-MIMO)

6.7.1.1.2 5 GHz (4x4 DL/UL MU-MIMO)

6.7.1.1.3 2.4 GHz (2x2 DL/UL MU-MIMO)

6.7.1.2 Access Point shall support the following data rates for Wifi 7:

6.7.1.2.1 802.11be (Wifi 7)

6.7.1.2.2 802.11ax (WiFi 6/6e)

6.7.1.2.3 802.11ac (WiFi 5)

6.7.1.2.4 802.11n

6.7.1.3 The Access point shall be able to have a Maximum Transmit of the following:

6.7.1.3.1 2.4 Ghz: 23dBm

6.7.1.3.2 5 Ghz: 29dBm

6.7.1.3.3 6 Ghz: 23dBm

6.7.1.4 Access Point shall be able to power up using the following methods

6.7.1.4.1 PoE

6.7.1.4.2 Power supply: PoE switch and PoE adapter with supported voltage of 44-57V DC and power consumption of 13W

6.7.1.4.3 The Access Point shall have the following features:

6.7.1.4.3.1 BSSID: 8 per radio

6.7.1.4.3.2 VLAN: 802.1Q

6.7.1.4.3.3 Advanced QoS: Per-user rate limiting

6.7.1.4.3.4 Guest Traffic Isolation

6.7.1.4.3.5 Concurrent Clients: 350 or equivalent

6.7.1.5 The Access Point shall have the following features:

6.7.1.5.1 Max BSSID: 8 per radio

6.7.1.5.2 VLAN: 802.1Q

6.7.1.5.3 Advanced QoS: Per-user rate limiting

6.7.1.5.4 Guest Traffic Isolation

6.7.1.5.5 Concurrent Clients: 350 or higher

6.7.1.6 Access Point shall support the following data rates:

6.7.1.6.1 802.11n (WiFi 4)

6.7.1.6.1.1 6.5 Mbps to 300 Mbps (MCS0 - MCS31, HT 20/40)

6.7.1.6.2 802.11ac (WiFi 5)

6.7.1.6.2.1 6.5 Mbps to 1.7 Gbps (MCS0 - MCS9 NSS1/2/3/4, VHT 20/40/80/160

6.7.1.6.3 802.11ax (WiFi 6/6e)

6.7.1.6.3.1 7.3 Mbps to 4.8 Gbps (MCS0 - MCS11 NSS1/2/3/4, HE 20/40/80/160)

6.7.1.6.4 802.11be (Wifi 7)

6.7.1.6.4.1 5 GHz: 7.3 Mbps to 8.6 Gbps (MCS0 - MCS13 NSS1/2/3/4, EHT 20/40/80/160/240)

6.7.1.6.4.2 6 GHz: 7.3 Mbps to 5.7 Gbps (MCS0 - MCS13 NSS1/2, EHT 20/40/80/160/240/320)

6.8 Network Controller

Winning bidder shall supply one (1) network controller for the Bontoc campus.

6.8.1 General Features and Capabilities

6.8.1.1 The network controller must have the following specifications:

6.8.1.1.1 Processor: Quad-core ARM® Cortex®-A57 at 1.7 GHz or equivalent

6.8.1.1.2 System memory: 4 GB DDR4 or equivalent

6.8.1.1.3 On-board storage: 16 GB eMMC

6.8.2 Connectivity

6.8.2.1 The network controller must support below configuration:

6.8.2.1.1 8 Gigabit Ethernet RJ45 ports

6.8.2.1.2 1 10G SFP+ port

6.8.2.1.3 SDWAN

6.8.2.1.3.1 1 Gigabit Ethernet RJ45 port

6.8.2.1.3.2 1 10G SFP+ port

6.8.3 Power

6.8.3.1 The network controller must be able to support a universal input of 100-240V AC, 50/60 Hz and 1 DC input.

6.8.3.2 The switch must be able to support a USP RPS DC input of 52V DC, 11.54A/11.5V DC, 5.22A.

6.8.3.3 The switch must have an internal AC/DC power supply of 50W.

6.8.3.4 The switch must have a maximum power consumption of 33W of and ESD/EMP protection of Air: ± 15kV, contact: ± 8kV

6.8.4 Management Tools

6.8.4.1 The controller must have the following management interfaces:

6.8.4.1.1 Ethernet port

6.8.4.1.2 Bluetooth

6.8.5 Performance

6.8.5.1 The controller must have the following features:

6.8.5.1.1 Redundant WAN with failover and load balancing WiFi QoS for the following:

6.8.5.1.1.1 Access points

6.8.5.1.2 Internet quality reporting

6.8.5.1.3 Outage reporting

6.8.5.1.4 Internet failover with LTE Backup

6.8.6 Security

6.8.6.1 The controller must have the following security features:

6.8.6.1.1 Application-aware firewall

6.8.6.1.2 Signature-based IPS/IDS threat detection

6.8.6.1.3 Content/country/domain/ad filtering

6.8.6.1.4 VLAN/subnet-based traffic segmentation

6.8.6.1.5 Full-stateful firewall

6.8.7 Security

6.8.7.1 The controller must support the following advanced networking features:

6.8.7.1.1 License-free SD-WAN

6.8.7.1.2 WireGuard

6.8.7.1.3 L2TP

6.8.7.1.4 OpenVPN server and client

6.8.7.1.5 IPsec site-to-site VPN

6.8.7.1.6 Policy-based WAN and VPN routing

6.8.7.1.7 DHCP relay

6.8.7.1.8 Customizable DHCP server

6.8.7.1.9 IGMP proxy

6.8.7.1.10 IPv6 ISP support

6.8.8 The switch must have an operating humidity range of 10 to 90% non-condensing.

6.9 Other SR transceiver requirements:

6.9.1 50 pcs transceivers for distribution switches proposed for the purposes of connecting the aggregate switch to the distribution switch.

6.9.2 40 pcs transceivers for access switches for the purpose of connecting the aggregate switch to the access switch.

6.9.3 2 pcs transceiver from Ubiquiti Dream Machine to Core Switch

6.10 Out-Of-Band Switch

Winning bidder shall supply, install and configure 1 unit of Out-Of-Band switch for the network equipment and servers.

6.10.1 Console and Interface

6.10.1.1 24 x Selectable RJ45 RS-232 Ports and 24 x Managed 10/100/1000 Base-T Switched Ethernet Ports

6.10.1.2 2 x 10/100/1000 Ethernet/SFP Fiber auto-media ports (1GbE chassis)

6.10.1.3 2 x SFP+ (10G only) Fiber and 1 x 10/100/1000 Base-T Ethernet (10 GbE chassis)

6.10.1.4 1 x micro USB 2.0 Console Port and 1 x RJ45 Serial (Straight Pinout)

6.10.1.5 16, 32, or 48 x RJ45 RS-232 Software Selectable 50 to 230,400 bps Console Ports

6.10.1.6 1 x Internal V.92 modem with RJ11 Socket

6.10.1.7 2 x USB 3.0 Host Ports for storage and 8 x USB 2.0 ports for device console management

6.10.1.8 24 x managed 10/100/1000 Base-T switched Ethernet Ports

6.10.2 Power

6.10.2.1 Dual IEC 60320 Socket Universal 100-240V AC 50/60Hz and IEC C14 side connectors

6.10.3 Memory and CPU

6.10.3.1 4-core CPU

6.10.3.2 8 GB DDR3 RAM

6.10.3.3 16 MB SPI with password protection

6.10.3.4 M.2 SATA III 64 GB SSD

6.10.4 Security, Encryption & Authentication

6.10.4.1 Trusted Platform Module 2.0

6.10.4.2 AAA - TACACS+, RADIUS, Active Directory/OpenLDAP, Kerberos, with local fallback

6.10.4.3 Embedded Firewall

6.10.4.4 IPSec and OpenVPN

6.10.5 Automation & Scalability

6.10.5.1 Docker support

6.10.5.2 Python

6.10.5.3 Perl and bash support

6.10.5.4 ZTP

6.10.5.5 SNMP-Standard MIBs

6.10.6 Global LTE Cellular Interface

6.10.6.1 Coverage Global LTE-A Support

6.11 University Internet

Winning bidder shall provide internet subscription for the main campus under the university with 1 Gbps speed.

7 Systems

7.1 Administrative Systems

Winning bidder shall develop, install and configure the following systems for MPSU.

7.1.1 Integrated Student Information System

7.1.1.1 Student Information Management

7.1.1.1.1 Must maintain accurate and up-to-date student records, including personal information, contact details, emergency contacts, and academic history.

7.1.1.1.2 Must track student demographics, such as age, gender, and nationality.

7.1.1.2 Enrollment Management

7.1.1.2.1 Must manage the entire enrollment process, from application submission to admission decisions and registration.

7.1.1.2.2 Must track student enrollment status, course registration, and fee payments.

7.1.1.3 Academic Records Management

7.1.1.3.1 Must maintain accurate academic records, including grades, transcripts, and degree audits.

7.1.1.3.2 Must calculate GPAs and generate academic reports.

7.1.1.3.3 Must manage course schedules, room assignments, and instructor assignments.

7.1.1.4 Financial Management

7.1.1.4.1 Must track student fees, payments, and refunds.

7.1.1.4.2 Must generate invoices and receipts.

7.1.1.4.3 Must integrate with the financial system to ensure accurate financial reporting.

7.1.1.5 Attendance Management

7.1.1.5.1 Must track student attendance, including class attendance and event attendance.

7.1.1.5.2 Must generate attendance reports to monitor student engagement.

7.1.1.6 Access Rights Management

7.1.1.6.1 Must allow administrators to define roles and permissions, ensuring secure access to sensitive information.

7.1.1.7 Data Migration

7.1.1.7.1 Must provide a secure migration of existing data into the new system in ensuring a smooth transition.

7.1.1.8 User Training

7.1.1.8.1 Must provide end-user training, knowledge transfer, administrator training, user management, reports creation, and site administration.

7.1.2 Human Resource Management System

7.1.2.1 Employee Information Management

7.1.2.1.1 Must maintain accurate and up-to-date employee records, including personal information, contact details, emergency contacts, and employment history.

7.1.2.1.2 Must manage the organizational structure, including departments, job titles, and reporting hierarchies.

7.1.2.2 Performance Management

7.1.2.2.1 Must allow for the creation, distribution, and completion of performance review forms.

7.1.2.2.2 Must track employee performance and provide feedback.

7.1.2.3 Payroll Processing

7.1.2.3.1 Must calculate salaries, wages, and deductions accurately.

7.1.2.3.2 Must generate payslips and other payroll reports.

7.1.2.3.3 Must comply with tax laws and regulations.

7.1.2.4 Benefits Administration

7.1.2.4.1 Must manage employee benefits, such as health insurance, retirement plans, and leave entitlements.

7.1.2.4.2 Must track benefit eligibility and deductions

7.1.2.5 Time and Attendance Tracking

7.1.2.5.1 Must track employee attendance, including time-in, time-out, and overtime hours.

7.1.2.5.2 Must generate attendance reports and calculate overtime pay.

7.1.3 Financial System

7.1.3.1 General Ledger

7.1.3.1.1 Must maintain a comprehensive general ledger, including a chart of accounts.

7.1.3.2 Financial Reporting

7.1.3.2.1 Must generate various financial reports, such as income statements, balance sheets, and cash flow statements.

7.1.3.3 User Access Control

7.1.3.3.1 Must implement strong access controls to protect sensitive financial information.

7.1.3.3.2 Must assign roles and permissions to different users to limit access to specific functions.

7.1.3.4 Procurement Module Vendor Management

7.1.3.4.1 Must allow for the creation and maintenance of a vendor database, including vendor information, contact details, and payment terms.

7.1.3.5 Procurement Module Purchase Order Management

7.1.3.5.1 Must track student attendance, including class attendance and event attendance.

7.1.3.5.2 Must generate attendance reports to monitor student engagement.

7.1.3.6 Financial Management

7.1.3.6.1 Must generate purchase orders, track order status, and manage purchase order approvals.

7.1.3.6.2 Must integrate with the inventory system to update stock levels upon receipt of goods.

7.1.3.7 Procurement Module Receiving and Inspection

7.1.3.7.1 Must facilitate the process of receiving goods, verifying quantities, and inspecting quality.

7.1.3.8 Procurement Module Accounts Payable

7.1.3.8.1 Must process vendor invoices, match them with purchase orders and receiving documents, and generate payment vouchers.

7.1.3.8.2 Must manage vendor payments and reconcile accounts.

7.1.3.9 Point-of-Sale (POS) Module Product and Service Catalog

7.1.3.9.1 Must maintain a comprehensive product and service catalog, including pricing, taxes, and discounts.

7.1.3.10 Point-of-Sale (POS) Module Sales Transactions

7.1.3.10.1 Must process sales transactions, including cash, credit card, and other payment methods.

7.1.3.10.2 Must generate sales receipts and invoices.

7.1.3.11 Point-of-Sale (POS) Module Inventory Management

7.1.3.11.1 Must track inventory levels, manage stock replenishment, and generate inventory reports.

7.1.3.11.2 Must integrate with the procurement module to initiate purchase orders when stock levels fall below a certain threshold.

7.1.4 Records Management System

7.1.4.1 Centralized Document Repository

7.1.4.1.1 Must provide a centralized repository for storing and organizing electronic documents.

7.1.4.1.2 Must support various file formats, including documents, spreadsheets, presentations, and images.

7.1.4.2 Document Classification and Indexing

7.1.4.2.1 Must allow for the classification and indexing of documents based on metadata, such as subject, author, date, and keywords.

7.1.4.2.2 Must use a consistent classification system to ensure easy retrieval.

7.1.4.3 Document Security and Access Control

7.1.4.3.1 Must implement strong security measures to protect sensitive documents.

7.1.4.3.2 Must assign access permissions to different user groups to limit access to authorized personnel.

7.1.4.4 Document Retention and Disposal

7.1.4.4.1 Must establish and enforce document retention policies based on legal and regulatory requirements.

7.1.4.4.2 Must automate document disposal processes to avoid unnecessary storage.

7.1.4.5 Workflow Management

7.1.4.5.1 Must automate document workflows, such as approval processes and routing.

7.1.4.5.2 Must track the status of documents and generate notifications.

7.1.4.6 Document Search and Retrieval

7.1.4.6.1 Must provide advanced search capabilities to quickly locate documents based on keywords, metadata, or full-text search.

7.1.4.6.2 Must support filtering and sorting options to refine search results.

7.1.4.7 Document Version Control

7.1.4.7.1 Must track changes to documents over time and maintain version history.

7.1.4.7.2 Must allow for easy comparison of different versions.

7.1.5 Campus-wide Online Portal

7.1.5.1 Personalized Dashboard

7.1.5.1.1 Must display relevant information, such as announcements, notifications, and upcoming deadlines.

7.1.5.2 Student Services

7.1.5.2.1 Must provide access to student information systems, including academic records, course schedules, and financial aid.

7.1.5.2.2 Must enable online registration, fee payment, and other student-related transactions.

7.1.5.3 Campus News and Events

7.1.5.3.1 Must display the latest campus news, events, and announcements.

7.1.5.3.2 Must allow users to subscribe to relevant news and event notifications.

7.1.6 Asset and Fleet Management System

7.1.6.1 Asset Inventory and Tracking

7.1.6.1.1 Must maintain a comprehensive inventory of all MPSU assets, including IT equipment, furniture, laboratory equipment, and vehicles.

7.1.6.1.2 Must track asset information, such as purchase date, cost, and current location.

7.1.6.1.3 Must use barcode or RFID technology for efficient asset identification and tracking.

7.1.6.2 Asset Lifecycle Management

7.1.6.2.1 Must track the entire lifecycle of assets, from acquisition to disposal.

7.1.6.2.2 Must schedule preventive maintenance and repairs to extend the life of assets.

7.1.6.2.3 Must calculate depreciation and generate depreciation schedules.

7.1.6.3 Asset Utilization and Allocation

7.1.6.3.1 Must allocate assets to departments or individuals based on need and availability.

7.1.6.3.2 Must track asset usage and utilization rates.

7.1.6.4 Fleet Management

7.1.6.4.1 Must track vehicle information, including make, model, year, and mileage.

7.1.6.4.2 Must schedule vehicle maintenance and repairs.

7.1.6.4.3 Must monitor fuel consumption and track vehicle usage.

7.1.6.4.4 Must manage driver licenses and insurance information.

7.1.6.5 Asset Disposal

7.1.6.5.1 Must establish procedures for asset disposal, including surplus property and equipment.

7.1.6.5.2 Must ensure compliance with disposal regulations and guidelines.

7.1.6.6 Reporting and Analytics

7.1.6.6.1 Must generate reports on asset utilization, maintenance costs, and depreciation.

7.1.6.6.2 Must provide data-driven insights to optimize asset management.

7.1.6.7 Hardware Integration

7.1.6.7.1 Must integrate with barcode scanners and RFID readers to automate asset tracking and inventory management.

7.1.7 Executive Management System

7.1.7.1 Dashboard and Key Performance Indicators (KPIs)

7.1.7.1.1 Must provide a centralized dashboard with real-time key performance indicators (KPIs) to track the overall performance of the institution.

7.1.7.1.2 Must allow for customization of dashboards to suit individual preferences and roles.

7.1.7.2 Data Visualization and Reporting

7.1.7.2.1 Must offer powerful data visualization tools to represent complex data in easy-to-understand charts and graphs.

7.1.7.2.2 Must generate comprehensive reports on various aspects of the institution's operations, such as financial performance, student enrollment, and faculty productivity.

7.1.7.3 Decision Support Tools

7.1.7.3.1 Must provide decision support tools, such as forecasting, scenario analysis, and what-if analysis, to assist in strategic planning.

7.1.7.4 Collaboration Tools

7.1.7.4.1 Must facilitate collaboration among executives and other stakeholders through features like document sharing, messaging, and video conferencing.

7.1.7.5 Security and Access Control

7.1.7.5.1 Must implement robust security measures to protect sensitive information and ensure data privacy.

7.1.7.5.2 Must provide role-based access control to limit access to authorized users.

7.1.7.6 Attendance Management

7.1.7.6.1 Must track student attendance, including class attendance and event attendance.

7.1.7.6.2 Must generate attendance reports to monitor student engagement.

7.1.7.7 Integration with Other Systems

7.1.7.7.1 Must integrate with other campus systems, such as the SIS, HRMS, and Financial System, to provide a unified view of institutional data.

7.2 Educational Systems

Winning bidder shall develop, install and configure the following systems for MPSU.

7.2.1 Library Management System

7.2.1.1 Catalog Management

7.2.1.1.1 Must allow for the creation, editing, and deletion of bibliographic records for books, journals, articles, and other library materials.

7.2.1.2 Item Management

7.2.1.2.1 Must track the physical items in the library, including their location, status (e.g., available, checked out, lost), and circulation history.

7.2.1.3 User Management

7.2.1.3.1 Must create and manage user accounts, including student, faculty, and staff accounts.

7.2.1.3.2 Must assign privileges and access rights to different user groups.

7.2.1.4 Circulation Management

7.2.1.4.1 Must allow for the automated checkout, return, and renewal of library materials.

7.2.1.4.2 Must generate overdue notices and fines.

7.2.1.5 Online Catalog

7.2.1.5.1 Must provide a user-friendly online catalog that allows users to search for library materials by keyword, author, title, subject, or other criteria.

7.2.1.5.2 Must enable users to place holds on items, request interlibrary loans, and save search results.

7.2.1.6 Digital Resources

7.2.1.6.1 Must support the management of electronic resources, such as e-books, databases, and online journals.

7.2.1.6.2 Must provide access to licensed databases and e-books through the library's website or a dedicated portal.

7.2.1.7 Attendance Management

7.2.1.7.1 Must track student attendance, including class attendance and event attendance.

7.2.1.7.2 Must generate attendance reports to monitor student engagement.

7.2.1.8 Reporting and Analytics

7.2.1.8.1 Must generate various reports, such as circulation statistics, usage reports, and inventory reports.

7.2.1.8.2 Must provide analytics tools to track library usage patterns and trends.

7.2.2 Learning Management System

7.2.2.1 Course Management

7.2.2.1.1 Must allow instructors to create and manage online courses, including organizing course content, setting deadlines, and assigning grades.

7.2.2.1.2 Must support various content formats, such as text, images, videos, and multimedia files.

7.2.2.2 Student Enrollment

7.2.2.2.1 Must allow students to enroll in courses and access course materials.

7.2.2.3 Communication Tools

7.2.2.3.1 Must provide tools for communication between instructors and students.

7.2.2.4 Assessment Tools

7.2.2.4.1 Must allow instructors to create and administer various types of assessments, including quizzes, exams, and assignments.

7.2.2.4.2 Must provide automated grading and feedback features.

7.2.2.5 Content Delivery

7.2.2.5.1 Must support various content delivery methods, such as streaming video, downloading files, and online lectures.

7.2.2.6 Progress Tracking

7.2.2.6.1 Must track student progress and provide timely feedback on assignments and assessments.

7.2.2.6.2 Must generate reports on student performance and course completion rates.

8 Auditorium

The winning bidder shall develop the existing audatorium MPSU university that should include the specifications below:

8.1 Wide LED Wall Display

8.1.1 Display

8.1.1.1 Dimension: ~8 ft. (vertical) x 11 ft. (horizontal) (Approximately)

8.1.1.2 Display area: ~133 ft2

8.1.1.3 Diagonal dimension: ~197 in.

8.1.1.4 Resolution of at least 1536 x 1296

8.1.2 Power requirement

8.1.2.1 Max: 4320 watts

8.1.2.2 Typical: 1440 watts

8.1.3 Heat generation

8.1.3.1 Max: 14736 BTU

8.1.4 Typical: 4920 BTU

8.2 1 Unit Mixer with the following specifications:

8.2.1 20-Channel Mixing Console

8.2.2 Max. 16 Mic / 20 Line Inputs (12 mono + 4 stereo)

8.2.3 4 GROUP Buses + 1 Stereo Bus

8.2.4 4 AUX (incl. FX)

8.2.5 "D-PRE" mic preamps with an inverted Darlington circuit

8.2.6 1-Knob compressors High-grade effects: SPX with 24 programs

8.2.7 24-bit / 192kHz 2in / 2out USB Audio functions

8.2.8 Works with the iPad (2 or later) through the Apple iPad Camera Connection Kit / Lightning to USB Camera Adapter

8.2.9 Includes Cubase AI DAW software download version

8.2.10 Cubasis LE for iPad available at App Store

8.2.11 PAD switch on mono inputs

8.2.12 +48V phantom power

8.2.13 Internal Universal Power Supply for world-wide use

8.2.14 XLR balanced outputs

8.2.15 Rack Mount Kit included

8.2.16 Metal chassis

8.3 2 Units Speakers with the following specifications:

8.3.1 System Performance

8.3.1.1 System Type Self-powered, 2-way

8.3.1.2 Frequency Response (±3 dB) 55 Hz – 14 kHz

8.3.1.3 Frequency Range (–10 dB) 48 Hz – 16 kHz

8.3.1.4 Nominal Dispersion 100° H × 40° V (C-position)

8.3.1.5 Maximum SPL @ 1 m 132 dB-SPL (peak)

8.3.1.6 Crossover Frequency 600 Hz acoustic 4th-order Butterworth

8.3.2 Amplification

8.3.2.1 System Power 1000 W

8.3.2.2 Distortion at Rated Power 0.1% max (30 Hz – 15 kHz)

8.3.2.3 System Limiter Dynamic limiter

8.3.2.4 Power Indicator Blue LED (system on)

8.3.3 Transducers

8.3.3.1 Driver Complement 8 × 21/4 in mid-high drivers; 1 × 12 in LF

8.3.4 Channels

8.3.4.1 Signal Indicators Power/fault, limit, front LED, signal input

8.3.4.2 Input Connections Channel 1: XLR balanced: Pin 1 (GND), Pin 2 (+), Pin 3 (–)

8.4 2 units Subwoofer Speakers with the following specifications:

8.4.1 System Performance

8.4.1.1 System Type Self-powered

8.4.1.2 Frequency Response (–3 dB) 40 Hz – 250 Hz

8.4.1.3 Frequency Range (–10 dB) 38 Hz – 250 Hz

8.4.1.4 Nominal Dispersion Omni-directional

8.4.1.5 Maximum SPL @ 1 m 130 dB-SPL (peak 6 dB CF)

8.4.1.6 Crossover Frequency 40 – 100 Hz Butterworth bandpass, 100 Hz 4th-order Butterworth HPF at Line Out

8.4.2 Amplification

8.4.2.1 System Power 1000 W

8.4.2.2 Distortion at Rated Power 0.1% max (30 Hz – 15 kHz)

8.4.2.3 System Limiter Dynamic limiter

8.4.2.4 Power Indicator Blue LED (system on)

8.4.3 Transducers

8.4.3.1 Driver Compliment 2 × 10-in high-excursion drivers

8.4.4 Channels

8.4.4.1 Channels 1/2

8.4.4.2 Signal Indicators Power/fault, limit, front LED, signal input

8.4.4.3 Input Connections 2 XLR-1/4-in combo

8.4.4.4 Controls Volume level, front LED function select, power on/off, polarity select, line output EQ

8.5 3 Units Wireless PA System Bluetooth Speakers

8.6 3 Units Compact Loudspeakers with the following specifications:

8.6.1 Frequency Response (–3 dB) 1 80 Hz – 16,000 Hz

8.6.2 Frequency Range (–10 dB) 1 70 Hz – 18,000 Hz

8.6.3 Nominal Coverage Pattern AMU208: 90° × 60° in horizontal configuration (rotatable high-frequency horn)

8.6.4 AMU208-120: 120° × 60° in horizontal configuration (rotatable high-frequency horn)

8.6.5 Recommended High-pass Filter 70 Hz with minimum 12-dB/octave filter

8.6.6 Crossover Passive, separate bandpass filters per transducer (200 Hz & 1.2 kHz)

8.6.7 Transformer Taps 70V: 5, 10, 20, 40, 80 W, bypass

8.6.8 100V: 10, 20, 40, 80 W, bypass

8.7 1 Unit Amplifier

8.7.1 Power Rating

8.7.1.1 Amplifier Power 2 × 600 W (THD+N < 0.04%, 1 kHz, 4–8 Ω, 70/100V)

8.7.1.2 I-Share Mode Power 1 × 1200 W (2–4 Ω, 70/100V)

8.7.1.3 Gain (Low-Z mode) 35 dB

8.7.1.4 Gain (70V mode) 35 dB

8.7.1.5 Gain (100V mode) 38 dB

8.7.2 Audio Performance

8.7.2.1 Frequency Response 4–8 Ω: 20 Hz – 20 kHz (±1 dB @ 1 W)

8.7.2.2 70/100V: 20 Hz – 20 kHz (±1 dB @ 1 W) with 50 Hz high-pass filter

8.7.2.3 Channel Separation (Crosstalk) > 80 dB @ 1 kHz, > 65 dB @ 20 kHz

8.7.2.4 Dynamic Range ≥ 100 dBA (at rated power)

8.7.2.5 Audio Latency < 1 ms (any analog or AmpLink input to loudspeaker output)

8.8 6 pcs Wireless Microphone (with receiver and transmitter for the 6 units Wireless Microphones)

8.9 1 Unit Dual Band Equalizer to integrate with the sound system solution in this section

8.10 2 Units Live streaming mixer

9 Multimedia Conference Room

The winning bidder shall develop a total of 2 multimedia conference rooms for MPSU university. Each conference room should include quantities based on the specifications below:

9.1 Must include 1 unit Interactive Display of at least 75” with the specifications below.

9.1.1 Screen type resolution of 3,840 x 2,160 with 60Hz.

9.1.2 Brightness of 350cd/m2 (without glass)

9.1.3 Contrast ratio of 1200:1 (without glass)

9.1.4 Must have 8ms response time.

9.1.5 Speaker type: Built in Speaker (12W x 2CH);

9.1.6 External Control: RS232C In/Out, RJ45 In/Out

9.1.7 20 or more users can write or draw simultaneously.

9.1.8 Touch pen type - passive pen.

9.1.9 Object recognition range 5mm/ 10mm / 15mm.

9.1.10 Touch response time of 8ms.

9.1.11 Drawing speed (touch latency) of 45ms.

9.1.12 VESA Mount of 800 * 400.

9.1.13 Must be Wall Mounted

9.1.14 Hardware features Touch Overlay (IR), Front Connectivity, OPS I/F Support (w/OPS Box); WiFi/BT Module.

9.2 Conference table for 15 people

9.3 15 units of ergonomic office chair

9.4 2 units 2.5HP Split type Air-conditioning unit

9.5 1 unit of Digital Signal Processor (DSP) unit

9.6 1 unit of ceiling microphone

9.6.1 Must have automatic dynamic beamforming.

9.6.2 Must have 28 electret condenser capsules.

9.6.3 Must have perfect speech intelligibility.

9.6.4 Must be certified to work with MS Teams and Zoom.

9.6.5 Must have exclusion zones.

9.6.6 Must have priority zone.

9.6.7 Must have an audio output 1 x 3-pin terminal (fits Phoenix contact MCVW 1.5-3-ST-3.81); 2 x Digital Dante Network Audio (RJ-45 Primary and Secondary).

9.6.8 Must have a minimum latency of 4 ms

9.6.9 Must have max. sound pressure level 104 dB SPL.

9.6.10 Must have transducer principle of pre-polarized condenser microphone.

9.6.11 Must be integrated to the sound system solution.

9.7 1 unit of WiFi Access Point (See item 9.5 for specifications).

10 E-Classrooms

The winning bidder shall develop a total of 20 e-classrooms for MPSU main campus. Each conference room should include quantities based on the specifications below:

10.1 Must include 1-unit Interactive Display of at least 75” with the specifications below.

10.1.1 Must include 1-unit Interactive Display of at least 75” with the specifications below.

10.1.1.1 Must have screen size of 75"

10.1.1.2 Must have IPS panel technology

10.1.1.3 Must have edge type back light

10.1.1.4 Must have an aspect ratio of 16:09

10.1.1.5 Must have native resolution of 3,840 x 2,160 (4K UHD)

10.1.1.6 Must have 120 Hz Refresh Rate

10.1.1.7 Must have brightness of 500 nit (Typ.)

10.1.1.8 Must have contrast ratio of 1,000: 1

10.1.1.9 Must have a dynamic CR of 1,000,000: 1

10.1.1.10 Must have a color gamut of 72% NTSC

10.1.1.11 Must have a viewing angle (H x V) of 178 × 178

10.1.1.12 Must have a color depth of 1.07 Billon Colors (10 bit (D))

10.1.1.13 Must have a response time of 6 ms (G to G)

10.1.1.14 Must have a surface treatment of 28%

10.1.1.15 Must have a life time of 50,000 hrs

10.1.1.16 Must have an operation hour of 24 / 7 (Hours/Days)

10.1.1.17 Must be able to have portrait and landscape viewing profile

10.1.1.18 Must have AC 100-240 V ~, 50/60 Hz power supply

10.1.1.19 Must have built-in power type

10.1.1.20 Must have a power consumption of 170 W / 230 W

10.1.1.21 Must have smart energy saving of 120 W

10.1.1.22 Must have ErP / Energy Star

10.1.1.23 Must have the following input connectivity

10.1.1.23.1 HDMI (3 (HDMI1/2: HDCP 2.2/1.4, HDMI3: HDCP 1.4)),

10.1.1.23.2 DP (HDCP 2.2/1.3), DVI-D (HDCP 1.4),

10.1.1.23.3 Audio In,

10.1.1.23.4 RS-232C In (4 Pin Phone-jack),

10.1.1.23.5 RJ45 (LAN),

10.1.1.23.6 IR In,

10.1.1.23.7 USB 2.0 (Type A) Minimum of 13 megapixels

10.1.1.24 Must have the following video/audio input/output

10.1.1.24.1 HDMI Out

10.1.1.24.2 Audio Out

10.1.1.24.3 RS-232C Out (4 Pin Phone-jack)

10.1.1.24.4 Daisy Chain (Input HDMI, DP/Output HDMI

10.1.1.25 Must have the English language interface

10.1.1.26 Must have the following accessories

10.1.1.26.1 Remote Controller

10.1.1.26.2 Power Cord

10.1.1.26.3 QSG

10.1.1.26.4 Regulation Book

10.1.1.26.5 Phone to RS-232C Gender

10.2 31 units of tables with chairs

10.3 Must include 1 unit of 4K dome CCTV camera

10.4 2 units 2.5HP Split type Air-conditioning unit

10.5 1 unit of WiFi Access Point (see item 9.5 for specifications).

11 Computer Laboratory

The winning bidder shall develop a total of 2 computer Laboratories for the 4 university of MPSU to be nominated on project kick-off. The laboratories should include the following components:

11.1 Must include 1-unit Interactive Display of at least 75” with the specifications below.

11.1.1 Must have screen size of 75"

11.1.2 Must have IPS panel technology

11.1.3 Must have edge type back light

11.1.4 Must have an aspect ratio of 16:09

11.1.5 Must have native resolution of 3,840 x 2,160 (4K UHD)

11.1.6 Must have 120 Hz Refresh Rate

11.1.7 Must have brightness of 500 nit (Typ.)

11.1.8 Must have contrast ratio of 1,000: 1

11.1.9 Must have a dynamic CR of 1,000,000: 1

11.1.10 Must have a color gamut of 72% NTSC

11.1.11 Must have a viewing angle (H x V) of 178 × 178

11.1.12 Must have a color depth of 1.07 Billon Colors (10 bit (D))

11.1.13 Must have a response time of 6 ms (G to G)

11.1.14 Must have a surface treatment of 28%

11.1.15 Must have a life time of 50,000 hrs

11.1.16 Must have an operation hour of 24 / 7 (Hours/Days)

11.1.17 Must be able to have portrait and landscape viewing profile

11.1.18 Must have AC 100-240 V ~, 50/60 Hz power supply

11.1.19 Must have built-in power type

11.1.20 Must have a power consumption of 170 W / 230 W

11.1.21 Must have smart energy saving of 120 W

11.1.22 Must have ErP / Energy Star

11.1.23 Must have the following input connectivity

- 11.1.23.1 HDMI (3 (HDMI1/2: HDCP 2.2/1.4, HDMI3: HDCP 1.4)),
- 11.1.23.2 DP (HDCP 2.2/1.3), DVI-D (HDCP 1.4),
- 11.1.23.3 Audio In,
- 11.1.23.4 RS-232C In (4 Pin Phone-jack),
- 11.1.23.5 RJ45 (LAN),
- 11.1.23.6 IR In,
- 11.1.23.7 USB 2.0 (Type A) Minimum of 13 megapixels

11.1.24 Must have the following video/audio input/output

- 11.1.24.1 HDMI Out
- 11.1.24.2 Audio Out
- 11.1.24.3 RS-232C Out (4 Pin Phone-jack)
- 11.1.24.4 Daisy Chain (Input HDMI, DP/Output HDMI

11.1.25 Must have the English language interface

11.1.26 Must have the following accessories

11.1.26.1 Remote Controller

11.1.26.2 Power Cord

11.1.26.3 QSG

11.1.26.4 Regulation Book

11.1.26.5 Phone to RS-232C Gender

11.2 Must include 30 sets of desktop computers with minimum specifications below.

11.2.1 CPU should be at least Intel Core Ultra 5 or equivalent

11.2.2 Minimum of 16 GB RAM

11.2.3 At least 512 GB SSD Storage

11.2.4 At least 23” Monitor size

11.2.5 With Keyboard, Mouse and built-in camera

11.2.6 Equipped with UPS

11.2.7 Windows Operating System

11.2.8 Office Productivity Software

11.2.9 Endpoint protection

11.3 Must include 31 units of tables with chairs.

11.4 Must include 2 units split type air-conditioning with 2.5 HP.

11.5 Must include 2 units of 4K dome CCTV camera.

11.6 Must include 1 units of WiFi Access Point (see item 9.5 for specifications)

12 Computer e Laboratory

The winning bidder shall develop a total of 2 computer e-Laboratories for MPSU to be nominated on project kick-off. These e-Laboratories should include the following components:

12.1 Must include 1-unit Interactive Display of at least 75” with the specifications below.

12.1.1 Must have screen size of 75"

12.1.2 Must have IPS panel technology

12.1.3 Must have edge type back light

12.1.4 Must have an aspect ratio of 16:09

12.1.5 Must have native resolution of 3,840 x 2,160 (4K UHD)

12.1.6 Must have 120 Hz Refresh Rate

12.1.7 Must have brightness of 500 nit (Typ.)

12.1.8 Must have contrast ratio of 1,000: 1

12.1.9 Must have a dynamic CR of 1,000,000: 1

12.1.10 Must have a color gamut of 72% NTSC

12.1.11 Must have a viewing angle (H x V) of 178 × 178

12.1.12 Must have a color depth of 1.07 Billon Colors (10 bit (D))

12.1.13 Must have a response time of 6 ms (G to G)

12.1.14 Must have a surface treatment of 28%

12.1.15 Must have a life time of 50,000 hrs

12.1.16 Must have an operation hour of 24 / 7 (Hours/Days)

12.1.17 Must be able to have portrait and landscape viewing profile

12.1.18 Must have AC 100-240 V ~, 50/60 Hz power supply

12.1.19 Must have built-in power type

12.1.20 Must have a power consumption of 170 W / 230 W

12.1.21 Must have smart energy saving of 120 W

12.1.22 Must have ErP / Energy Star

12.1.23 Must have the following input connectivity

- 12.1.23.1 HDMI (3 (HDMI1/2: HDCP 2.2/1.4, HDMI3: HDCP 1.4)),
- 12.1.23.2 DP (HDCP 2.2/1.3), DVI-D (HDCP 1.4),
- 12.1.23.3 Audio In,
- 12.1.23.4 RS-232C In (4 Pin Phone-jack),
- 12.1.23.5 RJ45 (LAN),
- 12.1.23.6 IR In,
- 12.1.23.7 USB 2.0 (Type A) Minimum of 13 megapixels

12.1.24 Must have the following video/audio input/output

- 12.1.24.1 HDMI Out
- 12.1.24.2 Audio Out
- 12.1.24.3 RS-232C Out (4 Pin Phone-jack)
- 12.1.24.4 Daisy Chain (Input HDMI, DP/Output HDMI

12.1.25 Must have the English language interface

12.1.26 Must have the following accessories

- 12.1.26.1 Remote Controller
- 12.1.26.2 Power Cord
- 12.1.26.3 QSG
- 12.1.26.4 Regulation Book
- 12.1.26.5 Phone to RS-232C Gender

12.2 Must include 30 sets of desktop computers with minimum specifications below.

12.2.1 CPU should be at least Intel Core Ultra 7 or equivalent

12.2.2 GPU should be at least RTX 4060 or equivalent

12.2.3 Minimum of 16 GB RAM

12.2.4 At least 512 GB SSD Storage

12.2.5 At least 23” Monitor size

12.2.6 With Keyboard, Mouse and built-in camera

12.2.7 Equipped with UPS

12.2.8 Windows Operating System

12.2.9 Office Productivity Software

12.2.10 Endpoint protection

12.3 Must include 31 units of tables with chairs.

12.4 Must include 2 units split type air-conditioning with 2.5 HP.

12.5 Must include 1 unit of 4K dome CCTV camera.

12.6 Must include 1 units of WiFi Access Point (see item 9.5)

13 IP PBX Solution

Winning bidder shall supply 1600 units IP Phones, 1 unit IP Phone for Operator and 1 unit IP PBX Platform for BRHMC.

13.1 1 unit IP Phone for operator

13.1.1 Protocols/Standards

13.1.1.1 The solution must support the following: SIP RFC3261, TCP/IP/UDP, RTP/RTCP, HTTP/HTTPS, ARP, ICMP, DNS (A record, SRV, NAPTR), DHCP, PPPoE, TELNET, TFTP, NTP, STUN, SIMPLE, LLDP, LDAP, TR-069, 802.1x, TLS, SRTP, and IPv6.

13.1.2 Network Interfaces

13.1.2.1 The solution must have dual switched auto-sensing 10/100/1000 Mbps Gigabit Ethernet ports with integrated PoE.

13.1.3 Graphic Display

13.1.3.1 The solution must have a 7-inch (1024x600) capacitive touch screen TFT LCD.

13.1.4 Wi-Fi

13.1.4.1 The solution must have integrated dual-band (2.4Ghz & 5Ghz) Wi-Fi.

13.1.5 Bluetooth

13.1.5.1 The solution must have integrated Bluetooth.

13.1.6 Feature Keys

13.1.6.1 The solution must have 5 navigation/menu keys and 9 dedicated function keys for: MESSAGE (with LED indicator), TRANSFER, HEADSET, HOLD, MUTE, SEND/REDIAL, SPEAKERPHONE, VOL+, and VOL-..

13.1.7 Auxilliary Port

13.1.7.1 The solution must have an RJ9 headset jack allowing EHS with USB headsets.

13.1.8 Voice Codecs and Capabilities

13.1.8.1 The solution must support G7.29A/B, G.711μ/a-law, G.726, G.722(wide-band), G723, iLBC, OPUS, in-band and out-of-band DTMF (in audio, RFC2833, SIP INFO)..

13.1.9 Telephony Features

13.1.9.1 The solution must support Hold, transfer, forward, 5-way conference, call park, call pickup, shared-call appearance(SCA)/bridged-line-appearance(BLA), downloadable phonebook(XML, LDAP, up to 2000 items), call waiting, call log(up to 2000 records), XML customization of screen, off-hook auto dial, auto answer, click-to-dial, flexible dial plan, hot-desking, personalized music ringtones and music on hold, server redundancy, and fail-over.

13.1.10 HD Audio

13.1.10.1 The solution must have HD audio, an HD handset, and a speakerphone with support for wideband audio.

13.1.11 Extension Module

13.1.11.1 The solution must have an extension module.

13.1.12 QoS

13.1.12.1 The solution must support Layer 2 QoS (802.1Q, 802.1P), 802.11e (WMM), and Layer 3 (ToS, DiffServ, MPLS) QoS.

13.1.13 Security

13.1.13.1 The solution must have user and administrator level passwords, MD5 and MD5-sess based authentication, a 256-bit AES encrypted configuration file, SRTP, TLS, 802.1x media access control, and secure boot.

13.1.14 Multi Language

13.1.14.1 The solution must support multiple languages: English, German, Italian, French, Spanish, Portuguese, Russian, Croatian, Chinese, Korean, Japanese, and more.

13.1.15 Upgrade/Provisioning

13.1.15.1 The solution must support firmware upgrade via FTP/TFTP/TFTPS/HTTP/HTTPS and mass provisioning using GDMS/TR-069 or AES encrypted XML configuration file..

13.1.16 Power & Green Energy Efficiency

13.1.16.1 The solution must include a universal power adapter: Input: 100-240V; Output: +12V, 1A; Integrated Power-over-Ethernet(802.3af) IEEE 802.3az Energy-Efficient Ethernet. Max power consumption 6.5W (power adapter).

13.1.17 Temperature and Humidity

13.1.17.1 The solution must operate at 0°C to 40°C and store at -10°C to 60°C. Humidity: 10% to 90% non-condensing.

13.1.18 Compliance

13.1.18.1 The solution must comply with FCC: Part 15 Subpart B (Class B), Part 15 Subpart C 15.247, Part 15 Subpart C 15.407, Part 1 Subpart I, Part 68. 316/317; IC: RSS-247, RSS-Gen, RSS-102, ICES-003, CS-03 Part V; CE: EN 55032, EN 55035, EN 61000-3-2, EN 61000-3-3, EN 62368-1, EN 62311, EN 301 489-1, EN 301 489-17, EN 300 328, EN 301 893; RCM: AS/NZS CISPR 32, AS/NZS 62368.1, AS/NZS 4268, AS NZS 2772.2, AS.

13.2 122 units IP Phones for users

13.2.1 Protocols/Standards

13.2.1.1 The solution must support the following: SIP RFC3261, TCP/IP/UDP, RTP/RTCP, HTTP/HTTPS, ARP, ICMP, DNS (A record, SRV, NAPTR), DHCP, PPPoE, TELNET, TFTP, NTP, STUN, SIMPLE, LLDP, LDAP, TR-069, 802.1x, TLS, SRTP, and IPv6.

13.2.2 Network Interfaces

13.2.2.1 The solution must have dual switched auto-sensing 10/100/1000 Mbps Gigabit Ethernet ports with integrated PoE.

13.2.3 Graphic Display

13.2.3.1 The solution must have a 2.8-inch (320x240) capacitive touch screen TFT LCD.

13.2.4 Wi-Fi

13.2.4.1 The solution must have integrated dual-band (2.4Ghz & 5Ghz) Wi-Fi.

13.2.5 Bluetooth

13.2.5.1 The solution must have integrated Bluetooth.

13.2.6 Feature Keys

13.2.6.1 The solution must have 5 navigation/menu keys and 9 dedicated function keys for: MESSAGE (with LED indicator), TRANSFER, HEADSET, HOLD, MUTE, SEND/REDIAL, SPEAKERPHONE, VOL+, and VOL-..

13.2.7 Auxilliary Port

13.2.7.1 The solution must have an RJ9 headset jack allowing EHS with USB headsets.

13.2.8 Voice Codecs and Capabilities

13.2.8.1 The solution must support G7.29A/B, G.711µ/a-law, G.726, G.722(wide-band), G723, iLBC, OPUS, in-band and out-of-band DTMF (in audio, RFC2833, SIP INFO)..

13.2.9 Telephony Features

13.2.9.1 The solution must support Hold, transfer, forward, 5-way conference, call park, call pickup, shared-call appearance(SCA)/bridged-line-appearance(BLA), downloadable phonebook(XML, LDAP, up to 2000 items), call waiting, call log(up to 2000 records), XML customization of screen, off-hook auto dial, auto answer, click-to-dial, flexible dial plan, hot-desking, personalized music ringtones and music on hold, server redundancy, and fail-over.

13.2.10 HD Audio

13.2.10.1 The solution must have HD audio, an HD handset, and a speakerphone with support for wideband audio.

13.2.11 QoS

13.2.11.1 The solution must support Layer 2 QoS (802.1Q, 802.1P), 802.11e (WMM), and Layer 3 (ToS, DiffServ, MPLS) QoS.

13.2.12 Security

13.2.12.1 The solution must have user and administrator level passwords, MD5 and MD5-sess based authentication, a 256-bit AES encrypted configuration file, SRTP, TLS, 802.1x media access control, and secure boot.

13.2.13 Multi Language

13.2.13.1 The solution must support multiple languages: English, German, Italian, French, Spanish, Portuguese, Russian, Croatian, Chinese, Korean, Japanese, and more.

13.2.14 Upgrade/Provisioning

13.2.14.1 The solution must support firmware upgrade via FTP/TFTP/TFTPS/HTTP/HTTPS and mass provisioning using GDMS/TR-069 or AES encrypted XML configuration file..

13.2.15 Power & Green Energy Efficiency

13.2.15.1 The solution must include a universal power adapter: Input: 100-240V; Output: +12V, 1A; Integrated Power-over-Ethernet(802.3af) IEEE 802.3az Energy-Efficient Ethernet. Max power consumption 6.5W (power adapter).

13.2.16 Temperature and Humidity

13.2.16.1 The solution must operate at 0°C to 40°C and store at -10°C to 60°C. Humidity: 10% to 90% non-condensing.

13.2.17 Compliance

13.2.17.1 The solution must comply with FCC: Part 15 (CFR 47) Class B CE: EN55022 Class B; EN55024 Class B;EN61000-3-2; EN61000-3-3;EN60950-1

13.3 1 unit IP PBX Solution

13.3.1 Network Interface

13.3.1.1 The solution must have 8 RJ11 FXS ports. All ports must have lifeline capability in case of a power outage. The number of ports must be expandable by peering with an FXS gateway.

13.3.1.2 The solution must have 8 RJ11 FXO ports. All ports must have lifeline capability in case of a power outage. The number of ports must be expandable by peering with an FXO gateway.

13.3.1.3 The solution must have three self-adaptive Gigabit ports (switched, routed, or dual mode) with PoE+.

13.3.2 Routing

13.3.2.1 The solution must have a NAT router (supporting router mode and switch mode).

13.3.3 Peripherals

13.3.3.1 The solution must have a reset switch.

13.3.3.2 The solution must have a 128x32 dot matrix graphic LCD with DOWN and OK buttons.

13.3.3.3 The solution must have LED indicators for Power 1/2, FXS, FXO, LAN, WAN, and Heartbeat.

13.3.3.4 The solution must have 2 USB 3.0 ports and 1 SD card interface.

13.3.4 Voice-over-Packet Capabilities

13.3.4.1 The solution must have LEC with NLP Packetized Voice Protocol Unit, 128ms-tail-length carrier-grade Line Echo Cancellation, Dynamic Jitter Buffer, Modem detection & auto-switch to G.711, NetEQ, FEC 2.0, and jitter resilience up to 50% audio packet loss.

13.3.5 Voice and Fax Codecs

13.3.5.1 The solution must support Opus, G.711 A-law/U-law, G.722, G722.1 G722.1C, G.723.1 5.3K/6.3K, G.726-32, G.729A/B, iLBC, GSM; and T.38.

13.3.6 Video Codecs

13.3.6.1 The solution must support H.264, H.263, H263+, and VP8.

13.3.7 QoS

13.3.7.1 The solution must support Layer 2 QoS (802.1Q, 802.1p) and Layer 3 (ToS, DiffServ, MPLS) QoS.

13.3.8 API

13.3.8.1 The solution must have a full API available for third-party platform and application integration.

13.3.9 Telephony Operating System

13.3.9.1 The solution must be based on Asterisk version 16.

13.3.10 DTMF

13.3.10.1 The solution must support In-band audio, RFC2833, and SIP INFO DTMF methods.

13.3.11 Provisioning Protocol & Plug-and-play

13.3.11.1 The solution must support mass provisioning using AES encrypted XML configuration file, auto-discovery & auto-provisioning of IP endpoints via ZeroConfig (DHCP Option 66 multicast SIP SUBSCRIBE mDNS), and eventlist between local and remote trunk..

13.3.12 Network Protocols

13.3.12.1 The solution must support SIP, TCP/UDP/IP, RTP/RTCP, IAX, ICMP, ARP, DNS, DDNS, DHCP, NTP, TFTP, SSH, HTTP/HTTPS, PPPoE, STUN, SRTP, TLS, LDAP, HDLC, HDLC-ETH, PPP, Frame Relay (pending), IPv6, and OpenVPN®.

13.3.13 Disconnect Methods

13.3.13.1 The solution must support Busy/Congestion/Howl Tone, and Polarity disconnect methods.

13.3.14 Media Encryption

13.3.14.1 The solution must support SRTP, TLS, HTTPS, SSH, 802.1X, and ZRTP media encryption.

13.3.15 Power Supply

13.3.15.1 The solution must have 2x DC 12V Power Jack Input: 100~240VAC, 50/60Hz; Output: DC 12V, 2A.

13.3.16 Multi-Language Support

13.3.16.1 Web UI: The solution must support English, Simplified Chinese, Traditional Chinese, Spanish, French, Portuguese, German, Russian, Italian, Polish, Czech, and Turkish for the web UI.

13.3.16.2 Customizable IVR/voice prompts: The solution must support English, Chinese, British English, German, Spanish, Greek, French, Italian, Dutch, Polish, Portuguese, Russian, Swedish, Turkish, Hebrew, Arabic, and Nederlands for customizable IVR/voice prompts.

13.3.16.3 Customizable language pack: The solution must support a customizable language pack to support any other languages.

13.3.17 Caller ID:

13.3.17.1 The solution must support Bellcore/Telcordia, ETSI-FSK, ETSI-DTMF, SIN 227 – BT, and NTT Caller ID.

13.3.18 Polarity Reversal/Wink

13.3.18.1 The solution must support Polarity Reversal/Wink with an enable/disable option upon call establishment and termination.

13.3.19 Call Center

13.3.19.1 The solution must support multiple configurable call queues, automatic call distribution (ACD) based on agent skills/availability/work-load, and in-queue announcements..

13.3.20 Customizable Auto Attendant

13.3.20.1 The solution must support up to 5 layers of IVR (Interactive Voice Response) in multiple languages..

13.3.21 Call Capacity

13.3.21.1 Users: The solution must support 3000 users.

13.3.21.2 Concurrent calls (G.711): The solution must support 450 concurrent calls (G.711).

13.3.21.3 Max concurrent SRTP calls (G.711): The solution must support 300 max concurrent SRTP calls (G.711).

13.3.21.4 Maximum Attendees of Conference Bridges: The solution must support up to 25 simultaneous video conference rooms, up to 300 simultaneous participants in all rooms combined, and up to 9 video feeds in all conference rooms.

13.3.22 Call Features

13.3.22.1 The solution must support call park, call forward, call transfer, call waiting, caller ID, call record, call history, ringtone, IVR, music on hold, call routes, DID, DOD, DND, DISA, ring group, ring simultaneously, time schedule, PIN groups, call queue, pickup group, paging/intercom, voicemail, call wakeup, SCA, BLF, voicemail to email, fax to email, speed dial, call back, dial by name, emergency call, call follow me, blacklist/whitelist, voice conference, video conference, eventlist, feature codes, busy camp-on/call completion, voice control, post-meeting reports, virtual fax sending/receiving, and email to fax..

13.3.23 Firmware Upgrade

13.3.23.1 The solution must be supported by a proprietary management system and a zero-touch cloud provisioning.

13.3.24 Internet Protocol Standards

13.3.24.1 The solution must comply with RFC 3261, RFC 3262, RFC 3263, RFC 3264, RFC 3515, RFC 3311, RFC 4028. RFC 2976, RFC 3842, RFC 3892, RFC 3428, RFC 4733, RFC 4566, RFC 2617, RFC 3856, RFC 3711, RFC 4582, RFC 4583, RFC 5245, RFC 5389, RFC 5766, RFC 6347, RFC 6455, RFC 8860, RFC 4734, RFC 3665, RFC 3323, RFC 3550, RFC6189..

13.3.25 Compliance

13.3.25.1 The solution must comply with FCC: Part 15 (CFR 47) Class B, Part 68; CE: EN 55032, EN 55035, EN 61000-3-2, EN 61000-3-3, EN 62368-1, ETSI ES 203 021, ITU-T K.21; IC: ICES-003, CS-03 Part I Issue 9; RCM: AS/NZS CISPR 32, AS/NZS 62368.1, AS/CA S002, AS/CA S003.1/.2; Power adapter: UL 60950-1 or UL 62368-1.

14 University Productivity

The winning bidder shall supply computing devices for university personnels that will be used aligned with the nature of their function.

14.1 Must include 1-unit Interactive Display of at least 75" with the specifications below.

14.1.1 Must have screen size of 75"

14.1.2 Must have IPS panel technology

14.1.3 Must have edge type back light

14.1.4 Must have an aspect ratio of 16:09

14.1.5 Must have native resolution of 3,840 x 2,160 (4K UHD)

14.1.6 Must have 120 Hz Refresh Rate

14.1.7 Must have brightness of 500 nit (Typ.)

14.1.8 Must have contrast ratio of 1,000: 1

14.1.9 Must have a dynamic CR of 1,000,000: 1

14.1.10 Must have a color gamut of 72% NTSC

14.1.11 Must have a viewing angle (H x V) of 178 × 178

14.1.12 Must have a color depth of 1.07 Billon Colors (10 bit (D))

14.1.13 Must have a response time of 6 ms (G to G)

14.1.14 Must have a surface treatment of 28%

14.1.15 Must have a life time of 50,000 hrs

14.1.16 Must have an operation hour of 24 / 7 (Hours/Days)

14.1.17 Must be able to have portrait and landscape viewing profile

14.1.18 Must have AC 100-240 V ~, 50/60 Hz power supply

14.1.19 Must have built-in power type

14.1.20 Must have a power consumption of 170 W / 230 W

14.1.21 Must have smart energy saving of 120 W

14.1.22 Must have ErP / Energy Star

14.1.23 Must have the following input connectivity

14.1.23.1 HDMI (3 (HDMI1/2: HDCP 2.2/1.4, HDMI3: HDCP 1.4)),

14.1.23.2 DP (HDCP 2.2/1.3), DVI-D (HDCP 1.4),

14.1.23.3 Audio In,

14.1.23.4 RS-232C In (4 Pin Phone-jack),

14.1.23.5 RJ45 (LAN),

14.1.23.6 IR In,

14.1.23.7 USB 2.0 (Type A) Minimum of 13 megapixels

14.1.24 Must have the following video/audio input/output

14.1.24.1 HDMI Out

14.1.24.2 Audio Out

14.1.24.3 RS-232C Out (4 Pin Phone-jack)

14.1.24.4 Daisy Chain (Input HDMI, DP/Output HDMI

14.1.25 Must have the English language interface

14.1.26 Must have the following accessories

14.1.26.1 Remote Controller

14.1.26.2 Power Cord

14.1.26.3 QSG

14.1.26.4 Regulation Book

14.1.26.5 Phone to RS-232C Gender

14.2 100 units of All-in-One (AiO) PC

14.2.1 CPU should be at least Intel Core Ultra 5 or equivalent

14.2.2 Minimum of 16 GB RAM

14.2.3 At least 512 GB SSD Storage

14.2.4 At least 21.5” Display

14.2.5 Windows Operating System

14.2.6 Office Productivity Software

14.2.7 Endpoint protection

14.2.8 3 Years Warranty

14.3 100 units of General-Purpose laptop

14.3.1 CPU should be at least Intel Core Ultra 5 or equivalent

14.3.2 Minimum of 16 GB RAM

14.3.3 At least 512 GB SSD Storage

14.3.4 At least 13” Display

14.3.5 Windows Operating System

14.3.6 Office Productivity Software

14.3.7 Endpoint protection

14.3.8 Power Adapter

14.3.9 Laptop Bag

14.3.10 3 Years Warranty

14.4 43 units of High-Tier Laptop

14.4.1 CPU should be at least Ultra 9 CPU or the equivalent

14.4.2 GPU should be at least 8GB or higher

14.4.3 Minimum of 32 GB RAM

14.4.4 At least 1TB SSD Storage

14.4.5 At least 15” Display or higher

14.4.6 2560 x 1600 IPS Screen

14.4.7 Windows Operating System

14.4.8 Office Productivity Software

14.4.9 Endpoint protection

14.4.10 Power Adapter

14.4.11 Laptop Bag

14.4.12 3 Years Warranty

14.5 All-in-one network (WiFi) Printer

Winning bidder shall supply 10 units of all-in-one printer with the specifications below.

14.5.1 Must have a print speed of up to 40 pages per minute (simplex/duplex).

14.5.2 Must be able to functions as print, copy and scan.

14.5.3 Must have high yield ink cartridges for printing up to 50,000 pages (black) and 30,000 pages (colour).

14.5.4 Must support a paper capacity of up to six paper sources with a maximum paper capacity of 5,150 sheets.

14.5.5 Must be environmentally friendly which uses up to 85% less power compared to laser printers and has fewer replacement parts, reducing environmental impact.

14.5.6 Must have consistent high-speed printing without the need for warm-up.

14.5.7 Finishing Options: New integrated inner finisher (optional).

14.6 ID Printer

The winning bidder shall supply 2 units of ID printer w/ 6,000 printable IDs (Consumable).

14.6.1 Printing

14.6.1.1 Dye diffusing retransfer

14.6.1.2 Full color or monochrome retransfer printing

14.6.1.3 Single- and dual-sided printing

14.6.1.4 Max Print Speed Single-Side*: 180 cph (with 300 dpi)

14.6.1.5 Max Print Speed Dual-Sided*: 190 cph (with 300 dpi)

14.6.1.6 Photo-quality images

14.6.1.7 Over-the-edge printing on standard CR80 media

14.6.2 Standard Features

14.6.2.1 USB and Ethernet connectivity

14.6.2.2 Single-card feed capability

14.6.2.3 150 card capacity feeder (30 mil)

14.6.2.4 15 card capacity reject hopper (30 mil)

14.6.2.5 100 card capacity output hopper (30 mil)

14.6.2.6 i Series™ intelligent media technology

14.6.2.7 Auto-calibration of media

14.6.2.8 21-character, 6-line LCD operator display

14.6.2.9 Print Resolution: printers available with 300 dpi

14.6.2.10 2GB memory standard

14.6.2.11 Lifetime warranty on printhead

14.6.2.12 2-year limited warranty on printer

14.6.3 Laminator Specifications

14.6.3.1 Single-or dual-sided lamination option (with dual-sided printer only)

14.6.3.2 GSA FIPS 201 approved (dual-sided lamination)

14.6.3.3 Uses True Secure i Series laminates only

14.6.3.4 Laminate for the top and bottom sold separately

14.6.3.5 Custom-coded laminates available

14.6.3.6 Custom holographic laminates available

14.6.4 Card Specifications

14.6.4.1 Card thickness: 30 mil

14.6.4.2 Card size: ISO 7810 format, Type ID-1, CR-80 size

14.6.4.3 Card material: PVC and composite, ABS cards, PET, PET-G, and Teslin® composite

14.6.4.4 Specialty cards: transparent (IR-blocked) or translucent card 30 mil (clear and colored)

14.6.4.5 Technology cards: contact and contactless smart cards, UHF cards

14.6.5 Communications Interfaces

14.6.5.1 USB 2.0

14.6.5.2 USB supports plug-and-play printer identification

14.6.5.3 10/100 Ethernet

14.6.5.4 802.11 b/g wireless connectivity

15 Other Peripherals

The winning bidder shall supply peripherals that will support and compliment the IT equipment on this project.

15.1 3 Units Professional Grade Camera with the following specifications:

15.1.1 Camera Specifications

15.1.1.1 Lens Mount - E-mount

15.1.2 Size & Weight

15.1.2.1 Weight (including supplied accessories): 5 lb 11 oz (2.59 kg)

15.1.2.2 Weight (main unit only): 1 lb 15 oz (890 g)

15.1.2.3 Dimensions (W x H x D) (body without protrusions): 4.49 x 4.57 x 6.02" (114 x 116 x 153 mm)

15.1.3 Power

15.1.3.1 Power Consumption: Approx. 18.0 W

15.1.3.2 Battery Operating Time: Approx. 105 min (BP-U35 battery), 215 min (BP-U70 battery)

15.1.3.3 Power Requirements: DC 19.5 V

15.1.4 Operation

15.1.4.1 Storage Temperature: –4 °F to +140 °F (–20 °C to +60 °C)

15.1.4.2 Operating Temperature: 32 °F to 104 °F (0 °C to 40 °C)

15.1.5 Recording Format (Video)

15.1.5.1 XAVC Intra and XAVC Long

15.1.6 Recording Format (Audio)

15.1.6.1 LPCM 24 bits, 48 kHz, 4 channels

15.1.7 Recording Frame Rate

15.1.7.1 Various XAVC Intra and Long formats

15.1.8 Recording/Playback Time

15.1.8.1 Various for XAVC Intra and Long formats

15.1.9 Camera Section

15.1.9.1 Shutter Speed: 64F to 1/8000 s

15.1.9.2 Sensitivity: ISO 800/12800

15.1.9.3 Signal-to-Noise Ratio: delete

15.1.9.4 Pixels: Approx. 12.9 megapixels (total), 10.2 megapixels (effective)

15.1.9.5 Built-in Optical Filters: Clear, variable ND (1/4ND to 1/128ND)

15.1.9.6 Sensor Type: 35 mm full-frame, single-chip CMOS image sensor

15.1.10 Slow & Quick Motion

15.1.10.1 Various frame rates for XAVC Intra and Long formats

15.1.11 White Balance

15.1.11.1 Modes: Preset, Memory A, Memory B (2000K–15000K)/ATW

15.1.12 Exposure

15.1.12.1 Gain Control: –3 to 30 dB (every 1 dB), AGC

15.1.13 Gamma

15.1.13.1 Gamma Curve: SDR mode: S-Cinetone, Standard, Still, ITU709, 709tone; HDR mode: HLG_Live, HLG_Natural

15.1.14 Latitude

15.1.14.1 15+ stop

15.1.15 Interface

15.1.15.1 Various input/output options, including minijack, BNC, USB, XLR, SDI, and HDMI

15.1.16 Media

15.1.16.1 CF express Type A / SD card (x2)

15.1.17 Monitoring

15.1.17.1 LCD: 3.46" (3.5 type), Approx. 2.76M dots

15.1.18 Built-in Microphone

15.1.18.1 Omnidirectional monaural and stereo electret condenser microphone

15.1.19 Wi-Fi/NFC

15.1.19.1 Frequency Band: 2.4 GHz, 5.2/5.3/5.6/5.8 GHz

15.1.19.2 Supported Format: IEEE 802.11 a/b/g/n/ac

15.1.20 Supplied Accessories

15.1.20.1 Handle, LCD monitor, Grip remote control, AC adapter, power cord, battery charger, battery pack, USB-C cable, liquid crystal display hood, cold shoe kit, lens mount cap, handle connector cap, user guide, warranty booklet

15.2 70-200mm F4 G OSS Lens

15.2.1 E Mount

15.2.2 Focal Length: 70-200mm

15.2.3 Aperture: F4

15.2.4 Mount: E-Mount

15.2.5 Weight: 1.8 lb (840g)

15.2.6 Features: Optical SteadyShot (OSS), weather-resistant design

15.3 12-24mm F4 G Camera Lens

15.3.1 E Mount

15.3.2 Focal Length: 12-24mm

15.3.3 Aperture: F4

15.3.4 Mount: E-Mount

15.3.5 Weight: 1.24 pounds (565g)

15.3.6 Features: Ultra-wide-angle zoom, constant aperture, weather-resistant design

15.4 Uninterrupted Power Supply

Different variants of UPS shall support different types of equipment from low power to high power requirement. Different variations shall have the minimum specifications below.

15.4.1 Winning bidder shall supply 100 units of 650VA UPS

15.4.1.1 Features

15.4.1.1.1 Power capacity of 360 W / 650 VA

15.4.1.1.2 4 battery backups with surge protection outlets for multi-device power protection

15.4.1.1.3 Automatic Voltage Regulation (AVR). AVR instantly corrects voltage fluctuations without using the battery, saving battery life for power outages

15.4.1.1.4 Circuit breaker button to reset for easy recovery from circuit overloads, protecting the UPS and connected electronics from electrical damage

15.4.1.1.5 Periodic battery self-test ensures early detection of a battery that needs to be replaced.

15.4.1.1.6 Generator Compatible, instant battery power to prevent frequency variations from affecting the connected load

15.4.1.2 Output

15.4.1.2.1 Power Capacity, 360 W / 650 VA

15.4.1.2.2 Nominal Output Voltage, 230 VAC +/- 10%

15.4.1.2.3 Output Frequency Range (sync mode) 50 Hz / 60 Hz +/- 1 Hz

15.4.1.2.4 Topology Line Interactive

15.4.1.2.5 Output Waveform, Stepped approximation to a sinewave

15.4.1.2.6 Transfer Time 4-6ms typical, 10ms max

15.4.1.2.7 Output Connections, (4) NEMA 5-15R Battery Backup Outlets

15.4.1.3 Input

15.4.1.3.1 Nominal Input Voltage of 230 VAC

15.4.1.3.2 Input Voltage Range of 140 - 300 VAC

15.4.1.3.3 Frequency of 50 Hz / 60 Hz ± 5Hz

15.4.1.3.4 Input Circuit Breaker of 5A

15.4.1.3.5 Input Connection of NEMA 5-15P

15.4.1.4 Management

15.4.1.4.1 LED Indicators. Provide easy-to-read status of the unit and utility power conditions.

15.5 Drone Camera

Winning bidder shall supply 3 units of Drone cameras for productivity.

15.5.1 Image Quality

15.5.1.1 Should have a minimum 24.2 Megapixel

15.5.1.2 APS-C CMOS Sensor

15.5.1.3 Should be able to capture high-definition images with Natural bokeh and low noise.

15.5.1.4 Must have multi shot noise reduction function

16 Other Requirements

16.1 Project Management

Commitment is to ensure that information and communication technology projects are completed successfully. This involves overseeing the project team, creating project plans, tracking progress, identifying and managing risks, and communicating with stakeholders.

16.1.1 Develop a clear understanding of the project goals and objectives, and ensure that all project team members have a shared understanding of these goals.

16.1.2 Create a comprehensive business user requirements and technical design requirements document.

16.1.3 Create a detailed project plan that includes timelines, milestones, and deliverables.

16.1.4 Assign roles and responsibilities to the project team members and ensure that everyone understands their roles.

16.1.5 Monitor project progress regularly and adjust the project plan as necessary.

16.1.6 Identify potential risks and develop contingency plans to mitigate these risks.

16.1.7 Communicate regularly with stakeholders, including sponsors, customers, and team members, to ensure that everyone is aware of project progress and any issues that arise.

16.1.8 Ensure that project documentation is accurate and up-to-date, including project plans, progress reports, and risk assessments.

16.1.9 Foster a positive team environment by encouraging collaboration, providing support, and recognizing team members' contributions.

16.1.10 Continuously evaluate project performance and identify opportunities for improvement.

16.2 System and Hardware Installation

Provision of essential services for installation of devices, software and systems supplied for this project.

16.3 Operating System (OS) Hardening

The OS hardening service shall include the patching and application of advanced system security procedures to secure the server's OS. The OS hardening procedures must include the following, at a minimum:

16.3.1 If available, install service packs, firmware and/or patches to keep the OS up to date

16.3.2 Perform secure configuration by deleting unnecessary programs and/or drivers, apply restrictions to the network, files and applications, assign groups and set the policies and use templates to manage and enforce security configurations

16.3.3 Install End-Point Protection

16.3.4 Perform DDoS attack protection and Vulnerability Assessment and Penetration Testing (VAPT)

16.4 Support Services

The winning bidder must ensure that appropriate support services are in place within the active warranty period of all supplied devices and software.

16.5 Knowledge Transfers

16.5.1 Provide training for all users and IT Support for MPSU.

16.5.2 Document handover:

16.5.2.1 Network Diagram

16.5.2.2 System Diagram

16.5.2.3 System Credentials

16.5.2.4 Network Topology and IP Plan

16.5.2.5 Application and system documentation

16.5.2.6 Business User Requirements

16.5.2.7 Technical Design Requirements

16.5.2.8 Test Scripts and UAT Documents

16.5.2.9 User Manuals with video tutorial

16.5.2.10 Method of Procedure (MoP) Documents

16.5.3 Prior to the project handover, the winning bidder must conduct a system walk-through with university nominated personnel. The intent primarily is to give orientations on the existing systems, supplied equipment/devices, completed installations, equipment type, functionalities, basic operations & maintenance, and how these are integrated holistically.

16.6 Testing and Commissioning Services

The winning bidder shall be required to perform testing and commissioning. Minimum Scope of Services are as follows:

16.6.1 The winning bidder shall submit the test scripts, UAT documents, MoP documents, to MPSU PMT prior to actual testing.

16.6.2 Perform actual testing as per Manufacturer prescribed testing methodologies.

16.6.3 Testing results must be documented and submitted to MPSU PMT not later than 48 hours from completion of the testing activities.

16.6.4 Should there be failed testing, the winning bidder is given a maximum of 12 hours to troubleshoot or rectify the problem. Re-testing shall then be performed. After completion of the 2nd testing and such has failed anew, the winning bidder shall furnish MPSU PMT with full report not more than 24 hours from the time failed testing has been declared, and must replace the defective hardware and/or software not more than fourteen (14) days from the date of completion of the failed testing. In case of longer replacement period, the winning bidder must inform MPSU PMT in writing, stating the reasons thereof and arrival date.

16.7 As-Built Plans Development

The winning bidder must develop and submit As-Built Plans for all works covered in this project such as electrical works, civil works, cabling works and system deployments. The As-Built Plans must accurately reflect the actual installations, and other relevant works completed and duly signed off by the signing authority designated by MPSU, as well as the respective trade engineers from the winning bidder's side. Mechanical and Electrical Load Schedules must form part of the As-Built plans. Submittal should be in the following form:

16.7.1 3 Sets of Print Outs in A1 Sheet, (properly compiled and labeled accordingly)

16.7.2 Sets of Print Outs in A3 Sheets (properly compiled and labeled accordingly)

16.7.3 Soft Copies in pdf format, compiled and stored in a USB drive

Checklist of Technical and Financial Documents

I. TECHNICAL COMPONENT ENVELOPE

Class "A" Documents

Legal Documents

☐ (a) Valid PhilGEPS Registration Certificate (Platinum Membership);
or

☐ (b) Registration certificate from Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI) for sole proprietorship, or Cooperative Development Authority (CDA) for cooperatives or its equivalent document,
and

☐ (c) Mayor's or Business permit issued by the city or municipality where the principal place of business of the prospective bidder is located, or the equivalent document for Exclusive Economic Zones or Areas;
and

☐ (d) Tax clearance per E.O. No. 398, s. 2005, as finally reviewed and approved by the Bureau of Internal Revenue (BIR).

Technical Documents

☐ (f) Statement of the prospective bidder of all its ongoing government and private contracts, including contracts awarded but not yet started, if any, whether similar or not similar in nature and complexity to the contract to be bid; **and**

☐ (g) Statement of the bidder's Single Largest Completed Contract (SLCC) similar to the contract to be bid, except under conditions provided for in Sections 23.4.1.3 and 23.4.2.4 of the 2016 revised IRR of RA No. 9184, within the relevant period as provided in the Bidding Documents; **and**

☐ (h) Original copy of Bid Security. If in the form of a Surety Bond, submit also a certification issued by the Insurance Commission;
or
Original copy of Notarized Bid Securing Declaration; **and**

☐ (i) Conformity with the Technical Specifications, which may include production/delivery schedule, manpower requirements, and/or after-sales/parts, if applicable; **and**

☐ (j) Original duly signed Omnibus Sworn Statement (OSS);
and if applicable, Original Notarized Secretary's Certificate in case of a corporation, partnership, or cooperative; or Original Special Power of Attorney of all members of the joint venture giving full power and authority to its officer to sign the OSS and do acts to represent the Bidder.

Financial Documents

☐ (m) The Supplier's audited financial statements, showing, among others, the Supplier's total and current assets and liabilities, stamped "received" by the BIR or its duly accredited and authorized institutions, for the preceding calendar year which should not be earlier than two (2) years from the date of bid submission; **and**

☐ (n) The prospective bidder's computation of Net Financial Contracting Capacity (NFCC);
or
A committed Line of Credit from a Universal or Commercial Bank in lieu of its NFCC computation.

Class "B" Documents

☐ (o) If applicable, a duly signed joint venture agreement (JVA) in case the joint venture is already in existence;

or

duly notarized statements from all the potential joint venture partners stating that they will enter into and abide by the provisions of the JVA in the instance that the bid is successful.

Other documentary requirements under RA No. 9184 (as applicable)

☐ (p) *[For foreign bidders claiming by reason of their country's extension of reciprocal rights to Filipinos]* Certification from the relevant government office of their country stating that Filipinos are allowed to participate in government procurement activities for the same item or product.

☐ (q) Certification from the DTI if the Bidder claims preference as a Domestic Bidder or Domestic Entity.

25 FINANCIAL COMPONENT ENVELOPE

☐ (a) Original of duly signed and accomplished Financial Bid Form; **and**

☐ (b) Original of duly signed and accomplished Price Schedule(s).

SECTION VIII. BIDDING FORMS

BID FORM

Date: _____
Invitation to Bid Nº: _____

To: **(***Procuring Entity*)

Gentlemen and/or Ladies:

Having examined the Bidding Documents including Bid Bulletin Numbers ***[insert numbers],*** the receipt of which is hereby duly acknowledged, we, the undersigned, offer to ***[supply/deliver/perform] [description of the Goods]*** 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 undertake to provide a performance security in the form, amounts, and within the times specified in the Bidding Documents.

We agree to abide by this Bid for the Bid Validity Period specified in **BDS** provision for **ITB** Clause 18.2 and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

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")

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your Notice of Award, shall be binding upon us.

We understand that you are not bound to accept the Lowest Calculated Bid or any Bid you may receive.

We certify/confirm that we comply with the eligibility requirements as per **ITB** 5 of the Bidding Documents.

We likewise certify/confirm that the undersigned, *[for sole proprietorships, insert:* as the owner and sole proprietor or authorized representative of *Name of Bidder*, has the full power and authority to

participate, submit the bid, and to sign and execute the ensuing contract, on the latter's behalf for the ***Name of Project*** of the ***Name of the Procuring Entity] [for partnerships, corporations, cooperatives, or joint ventures, insert:*** is granted full power and authority by the ***Name of Bidder***, to participate, submit the bid, and to sign and execute the ensuing contract on the latter's behalf for ***Name of Project*** of the ***Name of the Procuring Entity]***.

We acknowledge that failure to sign each and every page of this Bid Form, including the attached Schedule of Prices, shall be a ground for the rejection of our bid.

Dated this _____ day of _____ 20_____.

_____ _____

[signature] *[in the capacity of]*

Duly authorized to sign Bid for and on behalf of _____

List of all Ongoing Government & Private Contracts including contracts awarded but not yet started

Business Name : _____
Business Address : _____

Name of Contract/ Project Cost	a. Owner's Name b. Address c. Telephone Nos.	Nature of Work	Bidder's Role		a. Date Awarded b. Date Started c. Date of Completion	% of Accomplishment		Value of Outstanding Works / Undelivered Portion
			Description	%		Planned	Actual	
Government								
Private								
						Total Cost		

Submitted by : _____
(Printed Name & Signature)
Designation : _____
Date : _____

*One of the technical documents required to be in the Eligibility Envelope of a prospective bidder is a **list** of all its on-going and awarded but not yet started contracts.*

Statement of Single Largest Government or Private Contracts completed which are similar in nature

Business Name : _____
Business Address : _____

Name of Contract	a. b. c. Owner's Name Address Telephone Nos.	Nature of Work	Bidder's Role		a. Amount at Award b. Amount at Completion c. Duration	a. Date Awarded b. Contract Effectivity c. Date Completed
			Description	%		
Government						
Private						

Note: This statement shall be supported with:
1 Contract or Purchase Order (P.O)
2 Certificate of Acceptance or Certificate of Completion
3 Notice of Award and Notice to Proceed, if Applicable

Submitted by : _____
(Printed Name & Signature)
Designation : _____
Date : _____

NET FINANCIAL CONTRACTING CAPACITY

A. Summary of the Applicant Supplier's/Distributor's/Manufacturer's assets and liabilities on the basis of the attached income tax return and audited financial statement, stamped "RECEIVED" by the Bureau of Internal Revenue or BIR authorized collecting agent, for the immediately preceding year and a certified copy of Schedule of Fixed Assets particularly the list of construction equipment.

		Year 202_
1.	Total Assets	
2.	Current Assets	
3.	Total Liabilities	
4.	Current Liabilities	
5.	Net Worth (1-3)	
6.	Net Working Capital (2-4)	

B. The Net Financial Contracting Capacity (NFCC) based on the above data is computed as follows:

NFCC = [(Current assets minus current liabilities) (15)] minus the value of all outstanding or uncompleted portions of the projects under ongoing contracts, including awarded contracts yet to be started, coinciding with the contract to be bid.

NFCC = P _____

The value of bidder's current assets and current liabilities shall be based on the latest Audited Financial Statements submitted to the BIR.

Herewith attached are certified true copies of the audited financial statement: stamped "RECEIVED" by the BIR or BIR authorized collecting agent for the immediately preceding year.

Submitted by:

_____
Name of Supplier / Distributor / Manufacturer

_____
Signature of Authorized Representative
Date: _____

BID SECURITY (BANK GUARANTEE)

WHEREAS, *(Name of Bidder)* (hereinafter called "the Bidder") has submitted his bid dated *(Date)* for the *(Name of Contract)* (hereinafter called "the Bid").

KNOW ALL MEN by these presents that We *(Name of Bank)* of *(Name of Country)* having our registered office at _____ (hereinafter called "the Bank" are bound unto *(Name of Employer)* (hereinafter called "the Employer") in the sum of _____[2] for which payment well and truly to be made to the said Employer the Bank binds himself, his 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 his Bid during the period of bid validity specified in the Form of Bid; or

2) If the Bidder does not accept the correction of arithmetical errors of his bid price in accordance with the Instructions to Bidder; or

3) If the Bidder having been notified of the acceptance of his bid by the Employer during the period of bid validity:

   a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

   b) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

we undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owning to the occurrence of one or both of the two (2) conditions, specifying the occurred condition or conditions.

The Guarantee will remain in force up to and including the date _____[3] days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

_____
(Signature, Name and Address)

[2] The bidder should insert the amount of the guarantee in words and figures, denominated in the currency of the Employer's country or an equivalent amount in a freely convertible currency. This figure should be the same as shown of the Instructions to Bidders.

[3] Usually 28 days after the end of the validity period of the Bid. Date should be inserted by the Employer before the bidding documents are issued.

BID SECURITY SURETY BOND

BOND NO.: _____ DATE BOND EXECUTED: _____

By this bond, We __*(Name of Bidder)*__ (hereinafter called "the Principal") as Principal and __*(Name of Surety)*__ of the country of *(Name of Country of Surely)*, authorized to transact business in the country of __*(Name of Country of Employer)*__ (hereinafter called "the Surety") are held and firmly bound unto __*(Name of Employer)*__ (hereinafter called "the Employer") as Obligee, in the sum of _____[4] for the payment of which sum, well and truly to be made, we, the said Principal and Surety bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

SEALED with our seals and dated this _____ day of _____ 20 _____

WHEREAS, the Principal has submitted a written Bid to the Employer dated the _____ day of _____ 20 _____, for the _____ (hereinafter called "the Bid").

NOW, THEREFORE, the conditions of this obligation are:

1) If the Principal withdraws his Bid during the period of bid validity specified in the Form of Bid; or

2) If the Principal does not accept the correction of arithmetical errors of his bid price in accordance with the Instruction's to Bidders: or

3) If the Principal having been notified of the acceptance of his Bid by the Employer during the period of bid validity:

   a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or

   b) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

then this obligation shall remain in full force and effect, otherwise it shall be null and void.

PROVIDED HOWEVER, that the Surety shall not be:

[4] The bidder should insert the amount of bond in words and figures, denominated in the currency of the Employer's country of an equivalent amount in a freely convertible currency and callable on demand. This figure should be the same as shown in the Instructions to Bidders.

a) liable for a greater sum than the specified penalty of this bond, nor

b) liable for a greater sum that the difference between the amount of the said Principal's Bid and the amount of the Bid that is accepted by the Employer.

This Surety executing this instrument hereby agrees that its obligation shall be valid for 120 calendar days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Surety is hereby waived.

PRINCIPAL _____ SURETY _____

SIGNATURE(S) _____ SIGNATURES(S) _____

NAME(S) AND TITLE(S) _____ NAME(S) _____

SEAL _____ SEAL _____

Bid Securing Declaration Form
[shall be submitted with the Bid if bidder opts to provide this form of bid security]

REPUBLIC OF THE PHILIPPINES)
CITY OF _____) S.S.

BID SECURING DECLARATION
Project Identification No.: ***[Insert number]***

To: *[Insert name and address of the Procuring Entity]*

I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Bid Security, which may be in the form of a Bid Securing Declaration.

2. I/We accept that: (a) I/we will be automatically disqualified from bidding for any procurement contract with any procuring entity for a period of two (2) years upon receipt of your Blacklisting Order; and, (b) I/we will pay the applicable fine provided under Section 6 of the Guidelines on the Use of Bid Securing Declaration, within fifteen (15) days from receipt of the written demand by the procuring entity for the commission of acts resulting to the enforcement of the bid securing declaration under Sections 23.1(b), 34.2, 40.1 and 69.1, except 69.1(f),of the IRR of RA No. 9184; without prejudice to other legal action the government may undertake.

3. I/We understand that this Bid Securing Declaration shall cease to be valid on the following circumstances:

    a. Upon expiration of the bid validity period, or any extension thereof pursuant to your request;
    b. I am/we are declared ineligible or post-disqualified upon receipt of your notice to such effect, and (i) I/we failed to timely file a request for reconsideration or (ii) I/we filed a waiver to avail of said right; and
    c. I am/we are declared the bidder with the Lowest Calculated Responsive Bid, and I/we have furnished the performance security and signed the Contract.

IN WITNESS WHEREOF, I/We have hereunto set my/our hand/s this ____ day of *[month] [year]* at *[place of execution]*.

[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]
[Insert signatory's legal capacity]
Affiant

[Jurat]
[Format shall be based on the latest Rules on Notarial Practice]

Omnibus Sworn Statement (Revised)
[shall be submitted with the Bid]

REPUBLIC OF THE PHILIPPINES)
CITY/MUNICIPALITY OF _____) S.S.

AFFIDAVIT

I, [Name of Affiant], of legal age, [Civil Status], [Nationality], and residing at [Address of Affiant], after having been duly sworn in accordance with law, do hereby depose and state that:

1. *[Select one, delete the other:]*

   [If a sole proprietorship:] I am the sole proprietor or authorized representative of [Name of Bidder] with office address at [address of Bidder];

   [If a partnership, corporation, cooperative, or joint venture:] I am the duly authorized and designated representative of [Name of Bidder] with office address at [address of Bidder];

2. *[Select one, delete the other:]*

   [If a sole proprietorship:] As the owner and sole proprietor, or authorized representative of [Name of Bidder], I have full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached duly notarized Special Power of Attorney;

   [If a partnership, corporation, cooperative, or joint venture:] I am granted full power and authority to do, execute and perform any and all acts necessary to participate, submit the bid, and to sign and execute the ensuing contract for [Name of the Project] of the [Name of the Procuring Entity], as shown in the attached [state title of attached document showing proof of authorization (e.g., duly notarized Secretary's Certificate, Board/Partnership Resolution, or Special Power of Attorney, whichever is applicable;)];

3. [Name of Bidder] is not "blacklisted" or barred from bidding by the Government of the Philippines or any of its agencies, offices, corporations, or Local Government Units, foreign government/foreign or international financing institution whose blacklisting rules have been recognized by the Government Procurement Policy Board, **by itself or by relation, membership, association, affiliation, or controlling interest with another blacklisted person or entity as defined and provided for in the Uniform Guidelines on Blacklisting;**

4. Each of the documents submitted in satisfaction of the bidding requirements is an authentic copy of the original, complete, and all statements and information provided therein are true and correct;

5. [Name of Bidder] is authorizing the Head of the Procuring Entity or its duly authorized representative(s) to verify all the documents submitted;

6. *[Select one, delete the rest:]*

   [If a sole proprietorship:] The owner or sole proprietor is not related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

   [If a partnership or cooperative:] None of the officers and members of *[Name of Bidder]* is related to

the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

[If a corporation or joint venture:] None of the officers, directors, and controlling stockholders of *[Name of Bidder]* is related to the Head of the Procuring Entity, members of the Bids and Awards Committee (BAC), the Technical Working Group, and the BAC Secretariat, the head of the Project Management Office or the end-user unit, and the project consultants by consanguinity or affinity up to the third civil degree;

7. *[Name of Bidder]* complies with existing labor laws and standards; and

8. *[Name of Bidder]* is aware of and has undertaken the responsibilities as a Bidder in compliance with the Philippine Bidding Documents, which includes:

    a. Carefully examining all of the Bidding Documents;
    b. Acknowledging all conditions, local or otherwise, affecting the implementation of the Contract;
    c. Making an estimate of the facilities available and needed for the contract to be bid, if any; and
    d. Inquiring or securing Supplemental/Bid Bulletin(s) issued for the *[Name of the Project]*.

9. *[Name of Bidder]* did not give or pay directly or indirectly, any commission, amount, fee, or any form of consideration, pecuniary or otherwise, to any person or official, personnel or representative of the government in relation to any procurement project or activity.

10. **In case advance payment was made or given, failure to perform or deliver any of the obligations and undertakings in the contract shall be sufficient grounds to constitute criminal liability for Swindling (Estafa) or the commission of fraud with unfaithfulness or abuse of confidence through misappropriating or converting any payment received by a person or entity under an obligation involving the duty to deliver certain goods or services, to the prejudice of the public and the government of the Philippines pursuant to Article 315 of Act No. 3815 s. 1930, as amended, or the Revised Penal Code.**

IN WITNESS WHEREOF, I have hereunto set my hand this __ day of ___, 20__ at _____, Philippines.

[Insert NAME OF BIDDER OR ITS AUTHORIZED REPRESENTATIVE]
[Insert signatory's legal capacity]
Affiant

[Jurat]
[Format shall be based on the latest Rules on Notarial Practice]

For Goods Offered From Within the Philippines

Name of Bidder: _____ Invitation To Bid[4] Number: _____ Page 1 of 1

1	2	3	4	5	6	7	8	9	10
Item	Description	Country of origin	Quantity	Unit price EXW per item	Transportation and Insurance and all other costs incidental to delivery, per item	Sales and other taxes payable if Contract is awarded, per item	Cost of Incidental Services, if applicable, per item	Total price per item (col 5+6+7+8)	Total Price delivered Final Destination (col 9) x (col 4)

_____ _____

[signature] [in the capacity of]

Duly authorized to sign Bid for and on behalf of _____

For Goods Offered From Abroad

Name of Bidder _____ ITB[5] Number _____.Page ___of____

1	2	3	4	5	6	7	8	9
Item	Description	Country of origin	Quantity	Unit price CIF port of entry (specify port) or CIP named place(specify border point or place of destination)	Total CIF or CIP price per item (col. 4 x 5)	Unit Price Delivered Duty Unpaid (DDU)	Unit price Delivered Duty Paid (DDP)	Total Price delivered DDP (col 4 x 8)

_____ _____

[signature] [in the capacity of]

Duly authorized to sign Bid for and on behalf of _____

5


Republic of the Philippines
gppb
Government Procurement Policy Board