

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

**DRAFT NIT**



**भारतीय विमानपत्तन प्राधिकरण  
AIRPORTS AUTHORITY OF INDIA**

**क्षेत्रीय मुख्यालय, पश्चिमी क्षेत्र- 400099  
Regional Head Quarters, Western Region - 400099**

**सूचना आमंत्रित ई-निविदा  
Notice Inviting E-Tender**

**“एन.टी.पी. सर्वर व जी.पी.एस. क्लॉक की आपूर्ति स्थापना परीक्षण कमीशनिंग ”  
“S.I.T.C. of NTP Server & GPS Clock”**

**ई- निविदा संख्या  
E-Tender No.: 2022\_AAI\_112853\_1**

**निविदा दस्तावेज़ संख्या : भा.वि.प्रा./सं.दि.नि.प.क्षेत्र/एन.टी.पी. सिस्टम/मोपा/2022  
Tender Document No.: AAI/CNS-WR/NTP System/Mopa/2022**

**ई-निविदा मूल्य : रु. 2800/- (12% की दर से जीएसटी सहित)  
E-TENDER COST: Rs. 2800/- (Inclusive of GST @ 12%)**

Name of Bidder : .....  
Address of Bidder : .....  
Date of uploading on e-portal : .....

**INDEX**

<b>Sl. No.</b>	<b>Particulars</b>	<b>Page No.</b>
1	Cover Page	1
2	Index	2
3	Notice Inviting E-Tender (Section-I).	3-10
4	Instructions to Bidders (Section-II).	11-16
5	General Terms & Conditions (Section-III).	17-26
6	Special Conditions of the Contract (Section-IV).	27-47
7	Proforma for EMD – Bank Guarantee (Annexure-I)	48-49
8	Company/Firm details (Annexure-II).	50
9	List of works executed (Annexure-III).	51
10	Unconditional acceptance letter (Annexure-IV).	52
11	Bank Account Details for E payment (Annexure-V).	53
12	Proforma for Performance Bank guarantee (Annexure-VI).	54-55
13	Application for Extension of Time (Annexure-VII).	56-57
14	Bill of Material & Port Consignee (Annexure-VIII).	58-59
15	Proforma of Agreement with Successful Bidder (Annexure-IX).	60-61
16	Format for Intimation of Force Majeure Occurrence (Annexure-X).	62
17	Technical Compliance (Annexure-XI)	63-78
18	Declaration of “MSME –A” (Annexure-XII).	79
19	Power of Attorney (POA) (Annexure-XIII)	80
20	Declaration-1 by the Contractor/ Bidder (Annexure-XIV)	81
21	Declaration-2 by the Contractor/ Bidder (Annexure-XV)	82
22	Declaration-3 by the Contractor/ Bidder (Annexure-XVI)	83
23	Declaration-4 by the Contractor/ Bidder (Annexure-XVII)	84
24	Declaration -5 by the Contractor/ Bidder (Annexure-XVIII)	85
25	Pre-Contract Integrity Pact (Annexure-XIX)	86-92
26	Sample price schedule (Schedule A).	93-96
27	Check List (Annexure-XXI)	97-98
28	Network Sketch	99

**NOTICE INVITING TENDER**

Airports Authority of India invites e-tenders from OEM or Authorized System Integrator / Channel Partners/ Authorized Distributors / Suppliers of the OEM for “**S.I.T.C. of NTP Server and GPS Clock**” with completion period of **10 weeks** as per the details given below:

Sl. No.	Name of the Work	Estimated Cost (INR)	EMD Amount (INR)	Cost of Tender (INR) Including GST @12%
1.	S.I.T.C. of NTP Server and GPS Clock	3,23,27,348/- plus GST	6,46,547/-	2,800/-

The Bill of material and Technical Specifications are given in Annexure VIII & XI respectively in the tender document.

This tender is invited through the electronic tendering process and can be downloaded from the Central Public Procurement Portal (CPP Portal) with URL address “<http://etenders.gov.in>”. Please note that the submission of the tender is only through the CPP Portal “<http://etenders.gov.in>”. The tenders will not be accepted in any other form. Further it may be noted that tenders which are duly submitted on CPP Portal shall only be final and tenders just saved without submission/publish will not be available to the evaluation committee. Bidders are requested to go through the CPP Portal for guidelines, procedures & system requirements. In case of any technical difficulty, bidders may contact on the following help desk numbers & email ids.

**(HELP DESK SERVICES)**

- Any Queries relating to the process of online bid submission or queries relating to CPP portal Technical Assistance, please call the Helpdesk, on following Telephone Numbers Tel: +91-120-4200462, +91-120-4001002, +91-8826246593. & Email Address: support-eproc@nic.in
- Before submitting queries related to system, bidders are requested to follow the instructions given in e-procurement tendering portal and get their computer system configured according to the recommended settings for the e-procurement tendering portal.
- In order to facilitate the Vendors / Bidders, the AAI Help desk services shall be available on all working days (except Sunday) between 0800-2000 hours and shall assist users related to the use of the CPP e-procurement tendering portal. The below mentioned help desk numbers are intended only for queries related to the ease of use on e-procurement tendering portal. However, AAI shall not be responsible for any reason to bidders for not submitting the bids in the e-procurement tendering portal.
- For any technical assistance with regard to the functioning of the portal the bidders as well as AAI users may contact according to escalation matrix as mentioned below:

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

1.	Help Desk Team	Instant Support	eprochelp@aai.aero	011-24632950 Ext. 3512 (Six Lines)	0800-2000 Hrs. (MON - SAT)
2.	Sh. Sanjeev Kumar Manager (IT)	After 4Hrs of Issue	etendersupport@aai.aero	011-24632950, Ext-3523	0930-1730 Hrs. (MON-FRI)
3.	Sh. Dharmendra Kumar, Jt. GM (IT)	After 12Hrs	dkumar@aai.aero	011-24632950, Ext-3527	0930-1800Hrs (MON-FRI)
4.	General Manager (IT)	After 03 Days	gmitchq@aai.aero	011-24657900	0930-1730 Hrs. (MON-FRI)

- Before submitting queries related to system, bidders are requested to follow the instructions given in CPP Portal and get their computer system configured according to the recommended settings for the CPP Portal.
- Bidders are requested to kindly mention the URL of the Portal and Tender Id in the subject while emailing any issue along with the Contact details.
- For any issues/ clarifications relating to the understanding of the tender(s) published kindly contact the respective Tender Inviting Authority / Bid Manager whose details are given below:

Sl. No.	Name of the Bid Manager	Designation	Email id	Phone No.
1.	Dinesh Pal	SM (CNS-WR)	dineshpal@aai.aero	022-29217791 Mob: 9888978086

- Clarifications/queries if any may be uploaded on procurement portal as per critical dates mentioned in the CRITICAL DATE SHEET. Clarifications/queries should be in the following format:

Sl. No.	Tender Page No	Tender Clause /Para No.	Tender Clause	Bidder's Query

- In order to facilitate the Vendors / Bidders, the AAI Help desk services shall also be available on all working days (except Sunday) between 0800-2000 hours and shall assist users related to the use of the CPP Portal. The details of the help desk services along with other useful information regarding E-tender process are given at the link <https://www.aai.aero/en/Tender/Apply>.
- The AAI help desk numbers are intended only for queries related to the ease of use on CPP Portal and help needed on the operation of the Portal. However, AAI shall not be responsible for any reason to bidders for not submitting the bids in the CPP Portal. The above Helpdesk services shall remain closed on all Govt. Gazetted Holidays.

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

**The CRITICAL DATES for this tender are as given below:**

Publishing date	12.04.2022	From 17:30 HRS
Bid document download / sale start date	12.04.2022	From 18:00 HRS
Seek Clarification start date	12.04.2022	From 18:00 HRS
Seek Clarification end date	20.04.2022	From 18:00 HRS
Bid submission start date	12.04.2022	From 18:00 HRS
Bid submission end date	27.04.2022	From 15:00 HRS
Bid opening date Envelop 1 (Pre-qual./ Technical)	28.04.2022	From 15:30 HRS
Bid opening date Envelop 2 (Financial)		
Tender Fee	INR 2800/- (Rupees Two Thousand Eight Hundred Only) including GST @12% Non-refundable	
EMD	INR <b>6,46,547/-</b> (Rupees Six Lakh Forty-Six Thousand Five Hundred Forty-Seven Only)	

#### **ELIGIBILITY CRITERIA:**

1. **GST and PAN:** Bidder should have valid GST& PAN Registration number.
2. **Value Criteria:** Bidder should have successfully completed similar work with or better (higher) requirements with:
  - 2.1 One Work Order of value equal to 80% i.e. **INR 2, 58, 61,878 /-** or more of the estimated cost  
**or**
  - 2.2 Two separate Works Orders, each for a value equal to 50% i.e. **INR 1, 61, 63,674/-** or more of the estimated cost **or**
  - 2.3 Three separate Work Orders, each for a value equal to 40% i.e. **INR 1, 29,30, 939/-** or more of the estimated cost.
  - 2.4 The above criteria for similar type of work i.e. SITC of Network infrastructure, NTP Server and GPS clock should be completed in last 7 years, for Government Departments or Public Sector Undertakings or Private sectors (within India).
3. **Proof of satisfactory service:** Bidder shall submit performance certificate issued by the end customer in respect of the experience of works claimed by bidder against execution of works listed above. Certification of satisfaction with complete detail of work carried out shall be submitted.
4. The bidder should attach an OEM certificate or a valid authorization letter from OEM (if tender is being submitted on behalf of the OEM) of items given in the Bill of Material of Tender to quote and support the system with Service Centers at the worksite(s) as per consignee list.
5. A list of clients served (with contact address) shall also be attached.
6. Articles of Memorandum of Association or Partnership Deed or Proprietorship Deed as the case may be.

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

7. **Bidder should submit Pre-Contract Integrity Pact as per Annexure-XIX. Only those vendors/bidders, who commit themselves to Integrity Pact (IP) with the buyer, would be considered competent to participant in the bidding process.**
8. **Average Annualized Financial Turnover:** Vendor should have annualized average financial turnover of at least 30% i.e. **INR 96,98,204/-** of the estimated cost or equivalent during last 3 years ending 31st March of previous financial year. As a proof of financial turn over, copy of abridged Balance Sheet along with profit & loss account of the bidder for the last three years should be submitted.
9. **Acceptance Letter:** Unconditional acceptance of all tender conditions as per AAI format.
10. **Power of Attorney:** Power of Attorney (Stamp of Rupees 100/-) as per AAI format, authorizing the designated executive to sign all documents on behalf of the company or Firm, if the bid is not signed by the Director of the Company or Partner / Proprietor of the Firm.
11. Details of the Bidder Firm/ Company PQ Performa / Check list as per AAI format.
12. Bidder shall not be black listed or should not have a pending case or pending complaint of irregularity in India or abroad, by any global international body like World Bank / International Monetary Fund / World health Organization etc., or any Indian State/Central Governments Departments or Public Sector Undertaking of India. Bidder is required to submit an undertaking in this regard as per format. If the claim of the bidder is found to be wrong or the bidder is blacklisted by any of these agencies during the bidevaluation process his bid is liable to be rejected at that stage.

**The Contractor shall provide Pre-Qualification Documents as specified in this section. Lack of submission of any of the specified qualification documents or submission of any of the specified documents in a manner which is in non-conformance with the relevant clause of this tender document may result in rejection of the Tender. Date of submission of the Bid (i.e. Bid Submission End Date) will be taken as reference for assessing the eligibility criteria.**

13. **Tender Fee and EMD:**
  - 13.1 EMD shall be **INR 6,46,547/-** to be paid through online in favor of “Airports Authority of India” payable at Mumbai from a Nationalized / Scheduled bank (but not from Co-operative or Garmin Bank). Scanned copy of online payment receipt EMD of **INR 6,46,547/-** (Rupees Six Lakh Forty-Six Thousand Five Hundred Forty-Seven Only) or valid proof of exemption for EMD.
  - 13.2 The tender fee shall be **INR 2,800/-** (Rupees Two Thousand Eight Hundred Only) and will be non-refundable. Tender fee shall be paid to AAI through online in favor of “Airports Authority of India” payable at Mumbai.

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

- 13.3 Tenders not accompanied by the requisite EMD and Tender Fee shall be summarily rejected, except those eligible bidders who qualify for exemption as per the directives of Govt. of India. In case the Tender fee and EMD are not received within due date, bid will be rejected.

#### **14. Procedure for Online Collection of EMD and Tender Fee from Bidders:**

- 14.1 Bidder will login to the portal <https://etenders.gov.in/> with valid User ID (i.e. User ID mapped with Digital Signature Certificate) and follow the process of participation to the tender.
- 14.2 After Login search the tender in “Search Active Tender” tab with different criteria after that click on “set as favorite” to move on “My Tender”. Then click on “My tender” and view the tender details and click on proceed for Bid Submission.
- 14.3 For submission of online Tender Fee and EMD, click on Button as “Pay Online”.
- 14.4 **In case of Tender Fee:** If the Bidder is exempted from the tender fee payment, then select the option to “Yes” otherwise “NO”.
- 14.5 **In case of EMD:** If Bidder is paying EMD through any of below options, Select the option “Yes” (as per below screenshot) and provide the details and upload copy as a proof.
- 14.5.1 Bank Guarantee (BG)/Swift Transfer (ST)
- 14.5.2 Exempted from EMD Payment,
- Note: For submitting “EMD through BG/ST” or “Exemption from EMD payment” bidder must select “Yes” otherwise bidders will not have the option to pay EMD through Bank Guarantee. Once proceeded it is not possible to revert the option.
- 14.6 Select option “NO” for proceeding for Online EMD payment. After selecting the option, click on “Next” Button. Further process to be followed as per details available.

#### **15. List of documents to be uploaded in the Eligibility Bid (Technical Envelope):**

Sl. No.	Eligibility Bid e-Documents (PDF)	Details
A	GSTN & PAN document	Firm/Company Details
B	Pre-Contract Integrity Pact	IP
C	Proof of Experience of Works claimed. (copy of relevant pages of PO / Work Order issued by the customer)	Experience PO-01 Experience PO-02 Experience PO-03
D	Proof of completion (Completion Certificate issued by the customer) with complete details of works claimed	CC-01, CC-02 & CC-03
E	A letter of bidder having details of customer of works claimed for experience including postal address, official Phone Number, Email Address and URL (if any).	PO-Customer Details
F	Scanned Copy of EMD and Tender Fee payment/ MSME, NSIC certificate for exemption as per Govt. prevalent rules shall applicable as on date of acceptance.	EMD & Tender fee copy

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

G	Copy of abridged Balance sheet along with Profit & Loss Statement for last 3 years ending 31st March of previous Year by CA having UDIN.	ABS-2020-21; ABS-2019- 20; ABS-2018-19
H	Articles of Memorandum of Association or Partnership Deed	MOA/Firm Deed
I	Letter for Un-conditional Acceptance of terms & conditions of tender as per Annexure-IV	Acceptance Letter
J	Power of Attorney (POA) (In case of Signatory is other than Director of a Company or Proprietor / Partner of the Firm)	POA
K	Details of the Vendor Firm/ Company: Format enclosed as per Annexure-II of the tender document	Vendor Details
L	Declaration-1, Declaration-2, Declaration-3, Declaration-4 & Declaration-5 by the Contractor/ Bidder (Annexure-XIV to XVIII)	Declaration-1, Declaration-2, Declaration- 3, Declaration- 4, Declaration-5
M	Any other eligibility related documents as per tender document.	Other Docs
N	Signed Tender Document including Corrigendum (If any).	Tender Doc
O	Duly Filled Compliance Statement as per Annexure-XI with supporting documents/ literature.	Compliance Statement
P	Rate of Statutory Taxes without price information. (GST& other if any)	
Q	OEM Certificate or Valid Authorization Letter from OEM	Certificate

**16. Envelope-II: The Financial e-Bid through CPP portal.**

All rates shall be quoted in the format provided and no other format is acceptable. If the price bid has been given as a standard BOQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BOQ file, open it and complete the **Light Blue colored** (unprotected) cell with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the file name. If the BOQ file is found to be modified by the bidder, the bid will be rejected.

**17. Bids Opening Process is as below:**

**Envelope-I:** Containing documents for technical bid (uploaded by the Bidder/firms) shall be opened as per **CRITICAL DATESHEET**. The intimation regarding acceptance/rejection of their bids will be intimated to the bidders /firms through e-tendering portal. Technical bid opening date shall be mentioned in **CRITICAL DATESHEET** (any changes in the date shall be intimated through CPP Portal).

If any clarification needed from the bidder about the deficiency in his uploaded documents in Envelope-I, he will be asked to provide it through CPP portal. The bidder shall upload the requisite clarification/documents within time specified by AAI, failing which tender will be liable for rejection.

**Envelope-II:** The financial bids of the bidder / firm found to be meeting the qualifying requirements and technical criteria shall be as per **CRITICAL DATESHEET**. (**Depending on technical Bid evaluation the date shall be intimated through CPP portal**).



### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

18. AAI reserves the right to accept or reject any or all applications without assigning any reasons. AAI also reserves the right to call off tender process at any stage without assigning any reason.
19. AAI reserve the right to disallow issue of tender document to working agencies whose performance at ongoing project(s) is below par and usually poor and has been issued letter of restrain / Temporary / Permanent debar by any department of AAI. **AAI reserve the right to verify the credentials submitted by the bidder/firm at any stage (before or after the award of the work).** If at any stage, any information/documents submitted by the bidder / firm is found to be incorrect / false or have some discrepancy which disqualifies the bidder / firm then AAI shall take the following action:
  - a) **Forfeit the entire amount of EMD submitted by the bidder / firm.**
  - b) **The bidder / firm shall be liable for debarment from tendering in AAI, apart from any other appropriate contractual / legal action.**
20. No single bidder / firm shall be permitted to submit two separate applications.
21. Public Procurement (Preference to Make in India) shall be applicable as per order No. P-45021/2/2017-PP (BE-II) dated May 02, 2019 issued by Ministry of Commerce & Industry (Public Procurement Section) linked with PPP MII Order, 2017.
22. Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs), 2017 i. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. ii. "Bidder from a country which shares a land border with India" for the purpose of this Order means: – a. An entity incorporated, established or registered in such a country; or b. A subsidiary of an entity incorporated, established or registered in such a country; or c. An entity substantially controlled through entities incorporated, established or registered in such a country; or d. An entity whose beneficial owner is situated in such a country; or e. An Indian (or other) agent of such an entity; or f. A natural person who is a citizen of such a country; or g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above iii. The beneficial owner for the purpose of (ii) above will be as under: 1) In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means. Explanation. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company; b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders' agreements or voting agreements; 2) In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership; 3) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

or capital or profits of such association or body of individuals; 4) Where no natural person is identified under 1) or 2) or 3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official; 5) In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership. iv. An Agent is a person employed to do any act for another, or to represent another in dealings with third person. v. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

23. MSME Support and Outreach Campaign will be applicable as per Office Memorandum no. DPE-7(4)/2007-Fin dated 10.05.2019 from the Director, Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises.
24. Purchase preference to Central Public Sector Undertaking shall be applicable as per the directives of Govt. of India prevalent on the date of acceptance.
25. Concessions to Indian Micro & Small Enterprise (MSEs) units will be given as per the provisions (para – 10) of public procurement policy for MSEs order 2012, MSEs (Micro & Small Enterprises) registered with DIC/NSIC/KVIC/KVIB/Directorate of Handicraft and handloom etc.
26. Reverse Auction will be conducted techno commercially acceptable vendors / tenderers.

**General Manager (CNS-WR) RHQ  
AAI, Mumbai**

**SECTION – II**

**INSTRUCTIONS TO BIDDERS**

**1. DEFINITIONS:**

- 1.1 "AAI / The Buyer" means the Airports Authority of India.
- 1.2 "The Bidder / Vendor" means the individual or firm who participates in this tender and uploads its bid.
- 1.3 "Project Leader AAI" means the AAI executive responsible for signing all documents from AAI side and shall coordinate all the activities of the project with the bidder / contractor.
- 1.4 "The Supplier / Contractor" means the individual or firm taking up the work as defined under the Notice Inviting Tender.
- 1.5 "The Works Order" means the order placed for the supply, installation, testing & commissioning of systems / works by the Buyer with the Contractor signed by the Buyer including all attachments and appendices thereto and all documents incorporated by reference therein.
- 1.6 "The Purchase Order / Work Order" means the order placed for the supply and installation of items by the Buyer with the Supplier signed by the Buyer including all attachments and appendices there to and all documents incorporated by reference therein.
- 1.7 "The Contract" means the agreement signed between the Buyer and the Contractor as per the terms and Conditions contained in the Purchase Order / Work Order.
- 1.8 "The Contract Price" means the price payable to the Contractor under the Purchase Order / Work Order for the full and proper performance of its contractual obligations.
- 1.9 "Non-responsive Bid" means a bid, which is not uploaded as per the instructions to the bidders or Earnest Money Deposit has not been attached, or the required data has not been provided with the Bid or intentional errors have been committed in the Bid.
- 1.10 *Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.***

**2. PRICE BID:**

- 2.1 The Price Bid will contain the following:  
The pricing schedule document as per format given in Sample Price Schedule (Schedule-A) shall be filled as per instruction as given in E-tender Portal.
- 2.2 Price bid should be submitted strictly as per the Performa in E-tender portal. Deviations in Statutory Taxes shall be payable by AAI as per the terms and conditions defined under tender clause (Taxes and Duties) No additional price break up is permitted.
- 2.3 In case of Supplies contract on Door Delivery basis where delivery is desired up to consignee address, it will become an indivisible work contract, which includes supply of items as per the schedule of quantities,

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

contractor is responsible for ensuring the items reach the site in good condition. The bidder shall survey the Rail / Road / Sea route for transporting the system to respective airports. If Road Permit is required to be arranged by bidder, consignee shall provide the required documents i.e. copy of purchase order, authorization letter etc. for arranging the road permit without any extra cost to AAI.

2.4 It may be clearly understood and noted that in Price Bid of the tender document is for pricing alone. No condition, whatsoever, should be stipulated in this part. Everything that the bidder has to say, regarding tender, other than pricing should be stated only in Technical Bid of the tender. If any conditions are stipulated in the Price Bid of the tender, the tender is liable to be rejected.

2.5 Tenders, in which any of the particulars and prescribed information are missing or are incomplete, in any respect and/or prescribed conditions are not fulfilled, shall be considered non-responsive and are liable to be rejected.

***Note: The offer shall be firm in Indian Rupees only. AAI will not provide any Form "C" or "D".***

2.6 The bidder shall quote as per price schedule given in Schedule-A for all the items in the price bid.

**2.7 In case the bidder not quoting price for all the items or not quoting for few items his price bid will not be considered.**

2.8 The prices quoted by the bidder shall remain firm during the entire period of contract and shall not be subject to variation on any account.

2.9 Post offer discount, if any, offered by the bidders shall not be entertained. Bidders' planning to offer discount shall therefore modify their offers suitably while quoting and shall quote clearly net price. However, such discounts from the firm declared as L1 on the basis of post bid negotiations if any shall be considered and such negotiated offer when agreed by AAI & the bidder shall form a part of the Price Bid.

2.10 Taxes as applicable and in force will be paid as per prevailing rules.

### **3. COST OF BIDDING:**

The Bidder shall bear all costs associated with the preparation and submission of the bid. The Buyer, will in no case, be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

### **4. THE BID DOCUMENTS:**

4.1 The required materials, bidding procedures and contract terms are prescribed in the Bid Documents. The Bid Documents include:

4.1.1 Notice Inviting E-tender

4.1.2 Instructions to Bidders

4.1.3 General Terms & Conditions of the Contract

4.1.4 Special terms and conditions

4.1.5 Annexure I to XX

4.1.6 Price Schedule-(Schedule-A)

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

- 4.2 The Bidder is expected to examine all instructions, forms, terms and specifications in the Bid Documents. Failure to furnish all information required as per the Bid Documents or submission of bids not substantially responsive to the Bid Documents in every respect will be at the bidder's risk and shall result in rejection of the bid.
- 5. AMENDMENTS TO BID DOCUMENTS:**
- 5.1 At any time, prior to scheduled date of submission of bids, AAI if it deems appropriate to revise any part of this tender or to issue additional data to clarify and interpretation of provisions of this tender, it may issue addendum/corrigendum to this tender. Any such addendum / corrigendum shall be deemed to be incorporated by this reference into this tender and binding on the bidders. Addendum/corrigendum will be notified through CPP portal at [www.etenders.gov.in](http://www.etenders.gov.in)
- 5.2 If Bidder needs to delete and create a new bid response in case AAI issues amendment corrigendum after bidder has created his response, and there is change in line item (new item added or existing item deleted) or in the price components of any line item he may do so.
- 6 PERIOD OF VALIDITY OF E-TENDER (BID):**
- 6.1 The **E- tender (Bid) shall remain valid for a minimum of 180 days from the date of opening of the bid.** The bidder shall not be entitled, to revoke or cancel the offer or to vary any term thereof, during the said period of validity without the **consent in writing of AAI**. In case of the bidder revoking or cancelling the offer or varying any term in regard thereof, the bidder's earnest money deposit shall be forfeited.
- 6.2 In exceptional circumstances, the Buyer may request the bidder's consent for an extension to the period of bid validity. The request and the responses thereto shall be made in writing.
- 7. E-TENDER BID OPENING AND EVALUATION:**
- 7.1 To shortlist technically qualified bidders, Technical bid shall be scrutinized by AAI to ensure whether the same are in conformity to Technical & Operational Requirement. Bidders shall provide complete information to substantiate compliance of the technical specification listed in the tender. In case of incomplete compliance statement or inadequate information, tenders shall be finalized on the basis of the information available. It shall, therefore, be in the bidders' interest to give complete and comprehensive technical particulars while submitting the bid.
- 7.2 AAI may seek clarification on technical details or any other information deemed necessary.
- 7.3 Tenders meeting Technical bid criteria as specified herein shall only be informed and considered for opening and evaluation of Price bid.
- 8. OPENING OF THE FINANCIAL BIDS:**
- 8.1 Financial Bids of those bidders who qualify in Technical bid evaluation shall be opened by AAI. Date and Time of opening of financial bid shall be notified to technically eligible bidders. Bidders can monitor the bid opening process on-Line.

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

8.2 No correspondence shall be entertained from the bidders after opening of Financial Bid of the Tender.

#### **9. Reverse Auction:**

9.1 Reverse Auction will be conducted with techno commercially acceptable vendors/ tenderers.

9.2 In case of submission of erroneous OR incorrect financial bid (BOQ) which led to the rejection of the bid, total bid submitted by the vendor / tenderer, will be summarily rejected even if the vendor / tenderer participated in reverse auction.

9.3 Reverse action process shall be conducted as per guidelines available & through CPP e-Procurement Portal at <http://etenders.gov.in/eprocure/app>.

#### **10. CONTACTING THE BUYER:**

10.1 Canvassing in any form in connection with the tenders is strictly prohibited and the tenders uploaded by the contractors who resort to canvassing are liable for rejection.

10.2 No bidder shall try to influence the Buyer directly or through external source on any matter relating to its bid, from the time of publication of E-tender till the time the contract is awarded.

10.3 Any effort by a bidder to influence the Buyer in the bid evaluation, bid comparison or contract award decisions shall result in the rejection of the bid, and such actions will be considered as bad performance for future Projects.

#### **11. AWARD OF CONTRACT:**

11.1 The acceptance of the tender will be intimated to the successful bidder by AAI.

11.2 AAI shall issue the purchase/work order to successful bidder. Successful bidder shall acknowledge the receipt of purchase/work order within five working days as a confirmation to acceptance of terms and conditions of purchase/work order duly signed by him on each page of the order.

11.3 Successful bidder has to enter into an agreement with AAI on terms and conditions mentioned in the tender, its corrigendum and technical queries and responses against which purchase/work order has been issued.

11.4 AAI shall be the sole judge in the matter of award of contract and the decision of AAI shall be final and binding.

#### **12. RIGHT TO ACCEPT OR REJECT THE TENDERS:**

12.1 The right to accept the tender in full or in part/parts will rest with AAI. However, AAI does not bind itself to accept the lowest tender and reserves to itself the authority to reject any or all the tenders received without assigning any reason whatsoever at any stage of the tender process.

12.2 Tenders not accompanied with prescribed information or are incomplete in any respect, and/or not meeting prescribed conditions, shall be considered non-responsive and are liable to be rejected.

12.3 The Buyer reserves the right to accept or reject any bid or a part of the bid or to annul the bidding process and reject all bids, at any time prior to award of contract without assigning any reason whatsoever and without thereby incurring any liability to the affected bidder or bidders on the grounds for the Buyer's action.

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

- 12.4 If the bidder gives wrong information in his E-Tender, AAI reserves the right to reject such tender at any stage or to cancel the contract, if awarded, and forfeit the Earnest Money.
- 12.5 Tenders where Earnest Money Deposit (EMD) is not paid OR non-submission of related documents relating to Exemption of EMD which shall be applicable to SSI or PSU shall be rejected outright.
- 12.6 Should a bidder have a relation or relations employed in AAI in the capacity of an officer, the authority inviting tender, shall be informed. In the event of failure to inform and in a situation where it is established that the relation or relations employed in AAI has / have tried to influence the tender proceedings then AAI at its sole discretion may reject the tender or cancel the contract and forfeit the Earnest Money.
- 12.7 The requirements indicated in this E tender are the minimum and bids of the firms not complying with these minimum requirements or having deviations equivalent to the minimum requirements shall be rejected. However, bids offering higher than the minimum requirements shall be technically acceptable without any additional Price implication.
- 12.8 Any correspondence after the opening of the technical bid, from the bidder, regarding the bid unless specifically sought by AAI shall not be considered. Such post bid offers / clarifications may be liable for action as per clause 10 of this section.

#### **13. ANNULMENT OF AWARD:**

Failure of the successful bidder to comply with the requirement of Clause 11 of this section shall constitute sufficient ground for the annulment of the award and forfeiture of the EMD in which event the Buyer may make the award to any other bidder at his discretion or call for new bids.

#### **14. CONSIDERATION OF ABNORMALLY LOW QUOTED (ALQ) BID:**

- 14.1 An Abnormally low quoted bid (ALQB) is one in which the bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the bidder to perform the contract at the offered price. Wherever the price of the lowest bidder is lower than the estimated cost by more than 25%, lowest bid can be termed as Abnormally Low Quoted Bid (ALQB). Processing of such bid shall be as follows:
- 14.2 All such items which are more than 25% below the estimated rate shall be termed as abnormally low quote items (ALQI) and these items shall be identified by the bid processing officer/bid manager.
- 14.3 The processing officer / bid manager shall seek clarification from the lowest bidder in respect of ALQ items.
- 14.4 The lowest bidder has to submit justification of their price either on the CPP e-tendering Portal (if possible) or submit through a separate letter along with analysis of rates for all such ALQ items.

#### **15. INTEGRITY PACT (IP):**

- 15.1 The pact essentially envisages an agreement between the prospective vendors/bidders and the buyer, committing the persons/ officials of both sides, not to resort to any corrupt practices in any aspect/stage of the contract. Only those vendors/bidders, who commit themselves to such a Pact with the buyer, would be considered competent to participate in the bidding process. In other words, entering into this Pact would be a preliminary qualification.

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

- 15.2 **Integrity Pact (IP) would be implemented through a panel of independent external Monitors (IEMs).** The IEM would review independently and objectively, whether and to what extent parties have complied with their obligations under the Pact.

**Names and contact details of the Independent External Monitor is as under:**

Sr. No.	Names of the Independent External Monitor(s)	Contact details
1.	Shri J.K. Khanna, IPS (Retired)	Address: A-102, Sector-55, Noida-201307 (UP) Phone No. +91-9810940403 Email: <a href="mailto:jkkhannaips@yahoo.com">jkkhannaips@yahoo.com</a>
2.	Shri. Ramabhadran Ramanujam, IAS (Retired)	Address: 44/24, Third Trust Cross Street, Mandavelipakkam, Chennai-600028 (TN) Phone No. +91-9495511954 Email: <a href="mailto:raamaanuj@gmail.com">raamaanuj@gmail.com</a>

- 15.3 Each page of such Integrity pact proforma (Annexure–XIX) should be duly signed by Purchaser’s competent signatory. All pages of the Integrity Pact are to be returned by the bidder (along with the technical bid) duly signed by the same signatory who signed the bid, i.e. who is duly authorized to sign the bid and to make binding commitments on behalf of his company. Any bid not accompanied by Integrity Pact duly signed by the bidder shall be considered to be a non-responsive bid and shall be rejected straightway.



**SECTION – III**

**GENERAL TERMS & CONDITIONS OF THE CONTRACT**

**1 PURPOSE & SCOPE:**

This document sets out the terms & conditions to be met in connection with the “**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**” for the work as per details given in the notice inviting E-tender with specifications as in **Annexure-XI**.

Bidders bidding for part supply of the total requirements will be rejected.

**2. COMPLIANCE:**

**2.1** The unconditional acceptance of all the terms & conditions of the E-tender has to be uploaded through a letter. The format of the letter is attached at **Annexure-IV**.

**2.2** The submission of the tender will imply acceptance of all the tender conditions by the bidder laid in tender document including all the Annexure & Schedules to the tender document.

**2.3** The compliance to the technical specifications as in **Annexure-XI** and terms & conditions should be supported by authenticated documentation wherever required.

**2.4** The submission of unconditional acceptance as described above is essential for the tender evaluation. The failure to upload the unconditional acceptance statement in the said format shall result in the bid being rejected.

**3. EARNEST MONEY:**

**3.1** Earnest Money Deposit of the technically unsuccessful bidders shall be returned after the completion of the technical evaluation process.

**3.2** The EMD of the successful bidder will be returned after receipt of Performance Bank Guarantee (PBG).

**3.3** The EMD amount shall be forfeited in the following events:

**3.3.1** If the successful bidder fails to enter into a contract with AAI within 30 calendar days after the issue of the work order.

**3.3.2** If the successful bidder fails to submit the Contract Performance Bank Guarantees stipulated in **Annexure-VI**.

**3.3.3** In the event of not accepting the conditions of the contract even after agreeing to do so and up loading the letter of un-conditional acceptance of terms as per letter in **Annexure-IV**.

**3.3.4** In a situation referred in **clause 11 of Section –II**.

**3.3.5** No interest or any other expenses, whatsoever, will be payable by AAI on the EMD in any manner.

**4. PERFORMANCE BANK GUARANTEE (PBG):**

**4.1** The successful bidder shall furnish the Contract Performance Bank Guarantee as specified in the tender within 30 days of issue of purchase/work order. The value of Performance Bank Guarantee shall be @3 % of the total project cost for contract period from the issue of purchase order. This has to be done in a fixed period of time as per terms and conditions of the tender to avoid any delay in execution of work. In case of delay

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

in execution of work the bidder shall be required to proportionately extend the PBG. In case successful bidder fails to submit the PBG within stipulated period, interest @ 12% p.a. on Performance Guarantee amount would be levied (non-refundable) for delayed period of submission and shall be deducted from EMD or First running Bill. In case successful bidder fails to submit Performance Bank Guarantee within 60 days of issue of purchase/work order, AAI reserves the right to forfeit EMD and cancel the order.

- 4.2** Performance Security is to be furnished by successful bidder within 30 days after notification of the award and it should remain valid for a period of 90 (ninety) days beyond the date of completion of all contractual obligations of the supplier, including warranty obligations.
- 4.3** The Performance Guarantee amount shall be payable to AAI without any condition whatsoever and the guarantee shall be irrevocable.
- 4.4** The Performance Guarantee shall be deemed to govern the following guarantees from the successful bidder, in addition to other provisions of the guarantee:
- 4.4.1** The Hardware/Software supplied under the contract shall be free from all defects/bugs and upon written notice from AAI, the successful bidder shall fully remedy, free of expenses to AAI, all such defects/bug as developed under the normal use of the said hardware/software within the period of guarantee/Warranty.
- 4.4.2** The Performance Guarantee is intended to secure the performance of the entire system. However, it is not to be construed as limiting the damages stipulated in any other clause.
- 4.4.3** The Performance Guarantee will be returned to the successful bidder at the end of the period of liability without interest.
- 4.4.4** The successful bidder will be fully responsible for the guaranteed performance of the supplied systems under warranty period. In case of any problem after commissioning and during guarantee warranty period the successful bidder will depute required resources to AAI's site to remove all defects at contractor's cost.
- 4.4.5** The acceptance of valid reasons for non-compliance to clause 4 above shall attracts a fine at the whole discretion of AAI (subject to maximum 10% of the Contract Value) and AAI's decision with regard to imposition of the fine shall be final. The fine shall be recovered from the Performance Bank Guarantee.
- 4.4.6** PBG shall be refunded to the contractor without interest, after he duly performs and completes the contract in all respects but not later than 90 (ninety) days of completion of all such obligations including the warranty under the contract.
- 4.4.7** The successful bidder shall submit BG (PBG/BG-SD/FBG) in accordance with the bank details.

CORPORATE NAME	: AIRPORTS AUTHORITY OF INDIA
BANK NAME	: ICICI BANK
IFSC CODE	: ICIC0000007
BG ADVISING MESSAGE	: IFN 760COV (BG ISSUE)
	: IFN 767COV (BG AMENDMENT)
"UNIQUE IDENTIFIER CODE	: AAI RHQ WR

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

4.4.7.1 While submitting the documents to BG issuing bank the vendor will also submit the request letter to the BG issuing bank as per details given below-

Date: \_\_\_\_\_

The Manager,  
(Bank),  
(Branch)

Sub: Inclusion of unique identifier code of AAI while transmitting BG cover messages where beneficiary bank is ICICI Bank (IFSC-ICIC0000007).

Dear Sir, /Ma'am

I/We, \_\_\_\_\_, request you to include unique identifier **AAIRHQWR** in field 7037 of the SFMS COVER MESSAGE IFN COV 760 (for BG issuance) and IFN COV 767 (for BG amendment) while transmitting the same to the beneficiary bank (ICICI Bank -IFSC-ICIC0000007).

Thanking you,

\_\_\_\_\_

(Vendor/Customer/Concessionaire)

#### **5. SECURITY DEPOSIT:**

- 5.1** 3% of total amount will be retained as contract performance guarantee in the event of failure in submitting Performance Bank Guarantee within stipulated time. However same will be released after submission of Performance Bank Guarantee.

#### **6. STANDARDS & PROVEN PRODUCT:**

- 6.1** State of the art technology shall be deployed in the equipment for the system offered and all designs, materials, manufacturing techniques and workmanship shall be in accordance with the highest accepted international standards for this type of equipment.

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

- 6.2 The bidder shall also state, where applicable, the National or other International Standard(s) to which the whole, or any specific part, of the equipment or system complies. The items/equipment's having same functionalities / offered for supply should be proven product.
7. **SUPPLY, INSTALLATION, TESTING & COMMISSIONING SCHEDULE:**  
**10 weeks from the date of issue of work order / Purchase order.**
8. **LIQUIDATED DAMAGES:**
- 8.1 A sum equivalent to 0.5% (half percent) per week for the price of uncompleted portion / activity / delivery of contract cost executed / completed beyond delivery schedule is recovered as liquidated damages. The total damages shall not exceed 10% (Ten percent) of the value of delayed goods. The liquidated damages shall be calculated on the base cost without the Govt. taxes and duties. If the uncompleted work, restricts the operation of complete system then LD shall be applicable to total value of contract with approval of Competent Authority.
- 8.2 **Delay in any stage of work shall invite L.D. according to value of the activity as defined above.** AAI, if satisfied, that the works can be completed by the contractor within a reasonable time after the specified time for completion, may allow further extension of time at its discretion with or without the levy of L.D. Application for Extension of time may be made as per the format in **Annexure-VII**. In the event of extension granted with levy of L.D., AAI will be entitled without prejudice to any other right or remedy available in that behalf, to recover from the contractor an agreed compensation amount calculated @ 0.5% (half percent) of the total value of the uncompleted portion of work per week or part thereof subject to a maximum of 10% (Ten percent) of total contract value excluding Govt. taxes and duties.
9. **TIME: THE ESSENCE OF CONTRACT:**  
The time and date of completion of the works as contained in this tender and as agreed to contractually shall be final and binding upon the contractor firm except for Para 16 of this section.
10. **DELAY & NON-CONFORMANCE:**  
In case of time schedule including approved delay with or without levy of liquidated damages for late delivery of equipment or late completion of supply whichever if applicable as contained in Para 6 & 7 above not being adhered to, AAI shall have the right to cancel the order wholly or in part thereof without any liability of cancellation charges and procure the goods elsewhere in which case the successful bidder shall make good the difference in the cost of goods procured elsewhere and price set forth in the order with the successful bidder. In the event of rejection of non-conforming goods, the successful bidder shall be allowed to correct the non-conformities without extension in delivery period. If successful bidder fails to do so within the stipulated time, the purchaser shall have the right to take recourse.
11. **DEDUCTIONS FROM CONTRACT PRICE:**  
All costs, damage or expenses which the AAI may have paid, for which under the contract the supplier is liable, will be claimed by the Airports Authority of India (AAI). All such claims shall be billed by the AAI to the Supplier regularly as and when they fall due. Such bill shall be supported by appropriate and certified

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

vouchers or explanations to enable the supplier to properly identify within fifteen days of the receipt of the corresponding bills and if not paid by the supplier within said period, the AAI may then deduct the amount from any money due or becoming due to the supplier under the contract or may be recovered by actions of Law or otherwise, if the supplier fails to satisfy the AAI of such claims.

#### **12. CORRESPONDENCE:**

All correspondence would be directly with the bidder and correspondence through agents will not be entertained.

#### **13. PATENTS, SUCCESSFUL BIDDER'S LIABILITY & COMPLIANCE OF REGULATIONS:**

- 13.1** Successful bidder shall protect and fully indemnify the AAI from any claims for infringement of patents, copyright, trademark, license violation or the like.
- 13.2** Successful bidder shall also protect and fully indemnify the AAI from any claims from successful bidder's workmen/employees, their heirs, dependents, representatives etc or from any person(s) or bodies/ companies etc. for any act of commission or omission while executing the order.
- 13.3** Successful bidder shall be responsible for compliance with all requirements under the laws and shall protect and indemnify completely the AAI from any claims/penalties arising out of any infringements and indemnify completely the AAI from any claims/penalties arising out of any infringements.

#### **14. SETTLEMENT OF DISPUTES:**

- 14.1** If a dispute of any kind whatsoever arises between the AAI and the Contractor in connection with, or arising out of the Contract or the execution of the works, whether during the execution of the Works or after their completion and whether before or after repudiation or after termination of the contract, including any disagreement by either party with any action, inaction, opinion, instruction, determination, certificate or valuation of the Project Leader or his nominee, the matter in dispute shall, in first place be referred to the General Manager (CNS-WR), AAI, who shall act as the conciliator on the matter. The disputes will firstly be settled by the Conciliator, failing which any party may invoke arbitration clause.
- 14.2** Unless the Contract has already been repudiated or terminated or frustrated, the Contractor shall in every case, continue to proceed with the works with all due diligence and the Contractor and AAI shall give effect forthwith to every decision of the Project Leader or his nominee unless and until the same shall be revised, as hereinafter provided, by the Conciliator or in an Arbitral Award.

#### **15. ARBITRATION AND LAW:**

- 15.1** All disputes and differences arising out of or in any way touching or concerning this contract (except where otherwise provided for in the contract) shall be referred to the sole arbitration of the Executive Director (CNS-OM), AAI, Rajiv Gandhi Bhavan, New Delhi. The award of the Arbitrator shall be final and binding on both the parties. The Arbitration and Conciliation Act, 1996 shall be applicable. It will be no bar if the Arbitrator appointed as aforesaid is or has been an employee of the Authority and the appointment of the

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

Arbitrator will not be challenged or be open to question in any Court of Law, on this account Indian laws shall govern this contract and time to time amendments issued by Govt. of India.

#### **16. TERMINATION OF CONTRACT AT PURCHASER'S INITIATIVE:**

- 16.1** AAI reserves the right to terminate the contract either in part or in full due to the reasons other than specified herein. The AAI shall in such an event give 15 days' notice in writing to the Supplier of their decision to do so.
- 16.2** The supplier upon receipt of such notice shall discontinue the work on the date to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and contract to the extent they are related to the terminated and terms satisfactory to the AAI, stop all further subcontracting or purchasing activity related to the work terminated, and assist the AAI in maintenance protection and disposition of the work acquires under the contract by AAI.

#### **17. FORCE MAJEURE:**

- 17.1** AAI may grant an extension of time limit set for the completion of the work in case the timely completion of the work is delayed by force majeure beyond the contractor's control, subject to what is stated in the following sub paragraphs and to the procedures detailed there in being followed. Force Majeure is defined as an event of effect that cannot reasonably be anticipated such as acts of God (like earthquakes, flood, storms etc), acts of states, the direct and indirect consequences of wars (declared or un-declared), hostilities, national emergencies, civil commotion and strikes (only those which exceed a duration of ten continuous days) at successful Bidder's factory. The successful bidder's right to an extension of the time limit for completion of the work in above mentioned cases is subject to the following procedures.
- 17.2** That within 10 days after the occurrence of a case of force majeure but before the expiry of the stipulated date of completion, the bidder informs the AAI in writing about the occurrence of Force Majeure Condition and that the Bidder considers himself entitled to an extension of the time limit.
- 17.3** That the contractor produces evidence of the date of occurrence and the duration of the force majeure in an adequate manner by means of documents drawn up by responsible authorities.
- 17.4** That the contractor proves that the said conditions have actually interfered with the carrying out of the contract.
- 17.5** That the contractor proves that the delay occurred is not due to his own action or lack of action.
- 17.6** Apart from the extension of the time limit, force majeure does not entitle the successful bidder to any relaxation or to any compensation of damage or loss suffered. `

#### **18. START OF CONTRACT:**

The Contract shall be considered as having come into force from the date of issue of work order by AAI.

#### **19. PRICE: FOLLOW THE INSTRUCTIONS AVAILABLE ON E-TENDER PORTAL:**

- 19.1** The bidder shall confirm that quoted prices shall be firm and fixed and subject to no escalation whatsoever till the validity period of the tender. The supplier shall quote the prices up to Door Delivery basis. In case of item rate tender, only rates quoted shall be considered.

## **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

### **19.2. COST OF SUPPLY OF ITEMS:**

Bidder shall indicate the cost of supply of items in INR.

### **19.3 COST OF FREIGHT AND INSURANCE:**

- 19.3.1 Successful bidder is responsible for delivering the items up to consignee Airports at his own cost. He shall make his own arrangement for obtaining Road permits/entry passes for transporting the system to consignee Airport; however, AAI will provide the requisite documents for obtaining road permits i.e. copy of purchase order, authorization letter etc. Nothing extra shall be paid by AAI.
- 19.3.2 Prices quoted by the supplier shall on Door Delivery basis.
- 19.3.3 Bidder shall quote the price up to destination on Door Delivery basis so that AAI can evaluate the financial impact of project in total, that means bidder shall arrange freight and insurance, loading/unloading etc. then bidder shall fill the price bid to ascertain net cost to AAI.
- 19.3.4 In case of Public Sector Undertakings (Govt. of India) and SSI registered with NSIC under single point registration scheme entitled for purchase preference facilities under the existing policy of Govt. of India, necessary price break-up indicating clearly the value-added content of the manufacturer must be indicated in the pricing schedule.
- 19.3.5 Bidder has to mention the prices strictly as per the format of the price schedule (schedule-A). Prices quoted only will be considered for price comparison.

### **20. PAYMENT TERMS:**

- 20.1 No mobilization advance shall be paid.
- 20.2 70% of purchase order price for supply of items and 100% of freight, insurance, taxes and duties against receipt of goods at site in good condition
- 20.3 Balance 30 % of goods cost and 100% of Installation and commissioning cost on completion of Installations and site acceptance by AAI.
- 20.4 Payment shall be released to the Contractor on submission of following documents:
- 20.4.1 Invoice + 2 copies
- 20.4.2 Itemized Packing list + 2 copies
- 20.4.3 Proof of dispatch of items – factory gate passes etc.
- 20.4.4 Installation / commissioning Certificate duly attested by AAI's representative.
- 20.4.5 3% of total amount will be retained **as Security Deposit** in the event of failure in submitting performance bank guarantee within stipulated time. However same will be released after submission of performance bank guarantee.
- 20.6 **Paying Authority:** Regional Executive Director, AAI, WR, Mumbai
- “The Tax Invoice for the supply of the mentioned goods / services / both has to be raised in pursuance of Section 31 of CGST Act to the concerned unit, which has received such supply, implying thereby that where the goods / services are supplied to a unit, the tax Invoice must be raised to such unit.”

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

**Bill shall be raised in Favor of “AIRPORTS AUTHORITY OF INDIA, Mopa Airport, Goa”, Payable at Mumbai - 400099 with GSTN: 30AAACA6412D1ZL.**

**21. GUARANTEE/WARRANTY:**

All goods or material shall be supplied strictly in accordance with the specifications. No deviation from such specifications of these conditions shall be made without AAI's agreement in writing must be obtained before any work against the order is commenced. All materials furnished by the successful bidder pursuant to the Order (irrespective of whether engineering/design or other information has been furnished, reviewed or approved by AAI) are required to be guaranteed to be of the best quality of their respective kinds (unless otherwise specifically authorized in writing by AAI) and shall be free from faulty design to the extent such design is not furnished by AAI. The goods/material used by the successful bidder and its workmanship should be of proper quality so as to fulfill in all respects, the operating conditions and other requirements specified in the order.

If any trouble or defect originating from the design, materials, workmanship or operating characteristic of any materials arise **during warranty period** bidder is notified thereof, the bidder at his own expense (including manpower, freight, duty and customs for items sent for repair) and at no cost to AAI, as promptly as possible make such alterations, repairs and replacement at the site as may be necessary to permit facilitate the functioning of the equipment in accordance with the specifications. The warranty period of repaired or replaced goods shall be extended for a period equal to the turnaround time (out of service period).

In the event that the materials supplied do not meet the specifications and/ or are not in accordance with the drawings and datasheets and rectification as required at the site. AAI shall inform the bidder giving full details of deficiencies. The bidder shall at his own expense, meet and agree with the representatives of AAI the action required to correct the deficiencies and shall attend to the deficiencies at his own expense. Replacement under warranty clause shall be made by the supplier free of all charges at site including freight, insurance and other incidental charges.

Successful bidder shall repair the unserviceable items failed during the warranty period within turnaround time of 10 days (for Indian suppliers). Turn around period is defined as the time period between the unserviceable item received by the supplier in factory and time when serviceable item is dispatched from the factory. Any delay in repairing the unserviceable card shall attract Liquidated Damage (LD) which shall be deducted either from the performance Bank Guarantee or from Security Deposit.

AAI reserves the right to encash complete value of performance Bank guarantee or forfeit security deposit, if the performance of supplied items is not satisfactorily without assigning any reason.



### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

*There will be no warranty of the cables, conduits used in the system. Contractor will not be liable for any damage to equipment's arising out of war, riots and natural calamity such as fire, storm earth quake etc. during warranty period.*

#### **22. PACKING AND MARKING:**

- 22.1** All packing should be strong enough to withstand rough Handling during loading, un- loading and transporting of the packages. Fragile articles should be packed with special precaution and should bear the marking like 'Fragile', 'Handle with care' and 'This Side up' etc.
- 22.2** All delicate surfaces of equipment/goods should be carefully protected.
- 22.3** All protrusions and threaded fittings shall be suitably protected.
- 22.4** The supplier shall be held liable for all damages or breakage of the goods attributable to defective or insufficient packing as well as for corrosion due to insufficient protection.
- 22.5** Supplier is responsible for delivering the items up to site and shall send the goods to ultimate AAI owned user consignee sites, in a fully packed condition as per requirement of component/equipment and fully insured.

#### **23. SUBSTITUTION & WRONG SUPPLIES:**

- 23.1** Unauthorized substitution or materials delivered not complying with the description or quality or supplied in excess quantity or rejected goods shall be taken back by the Successful Bidder at his cost and risk.
- 23.2** Bidder shall not substitute any item at the time of delivery against the item mentioned in purchase order unless the item is no longer available in the market due to obsolesce or any other reason and OEM issues the certificate to this effect.
- 23.3** AAI shall accept the higher version of item of same make and better Technical specifications if it is approved by General Manager (CNS).

#### **24. DISPATCH OF DOCUMENTS:**

The successful bidder shall forward two sets of the following documents, one each to the General Manager (CNS-WR) AAI, Mumbai and the Port consignee (as mentioned in **Annexure-VIII**) as soon as goods are dispatched

- 24.1** Invoice + 2 copies
- 24.2** Itemized Packing list with cost of each item + 2 copies
- 24.3** Proof of dispatch of items
- 24.4** Receipt from the Consignee for completion of S.I.T.C.

#### **25. TAXES, PERMITS AND LICENCES:**

- 25.1** Bidder shall be liable to pay any and all duties, levies and taxes lawfully assessed against AAI or bidder in pursuance of the contract.
- 25.2** Quoted / tendered rate shall be inclusive of all taxes, duties, freight **but exclusive of GST in BoQ.**

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

**25.3** Statutory variation in duties & taxes are to be allowed during the period from the date of the tender to the date of acceptance of the tender (i.e. placement of the contract) and during the original/re-fixed delivery period of the contract so that both the supplier and purchaser are equally compensated for rise or fall in the price of goods on account of such statutory variations.

#### **26. MISCELLANEOUS:**

**26.1** The system shall be installed on the existing infrastructure. Any modifications/alteration of AAI infrastructure for the installation shall be with prior written approval from AAI and at no cost to AAI. The bidder may visit the AAI sites before quoting, if he/she wishes so, with prior approval of the CNS in Charge of Automation unit.

**26.2** In addition to the above any other information/description the Bidders may wish to provide, like the features/performance figures specified/ indicated, should be with supporting documents/calculations. All figures indicated by the bidders must be fully qualified and subject to coordinated performance.

**26.3** AAI reserves the right to place repeat order, within 12months period i.e. from date of successful installation, not exceeding 50% the quantity of the original order.

**26.4** *The supplied Qty. may be deviated by 30% as per requirements of AAI. The successful bidder should be supplied the deviated Qty. within the quoted price.*

**Declaration:** The terms and conditions given in the Tender Document are hereby accepted unconditionally and shall be complied with.

#### **27. TESTING AND INSPECTION:**

##### **27.1 SITE ADAPTATION, SITE ACCEPTANCE TEST (SAT) & COMMISSIONING:**

**27.1** It will be the responsibility of the vendor / bidder to submit the system test procedure for conducting the post installation site acceptance testing. The procedure submitted by the vendor should be drafted in line with the standard practices followed in the industry and should be in accordance with the test procedures & practices specified by the OEM. The acceptance test procedure on approval by AAI shall become the document for acceptance of the equipment after installation at the site. The draft copy of system test procedure should be made available to AAI for approval before 7 days of the schedule site acceptance date.

**27.2** The system will be commissioned after successful completion of approved SAT, operational & maintenance training and all the works under the scope of the tender.

**27.3** Installation will be termed as completed after successful completion of SAT.

## SECTION – IV

### SPECIAL TERMS AND CONDITIONS

#### SPECIAL CONDITIONS OF THE CONTRACT:

**1. Standards:**

- 1.1 All designs, codes, developing platforms, developing techniques and workmanship shall be in accordance with the highest accepted international standards for this type of work. The bidder shall also state, where applicable, the National or other International standard(s) to which the whole, or any specific part, of the system, software complies.
- 1.2 The requirements given in this document are firm and no deviation of any kind is acceptable.
- 1.3 All the hardware and software as per Annexure XI will be supplied by the Contractor /Vendor as detailed in Tender documents. Specification/Configuration of items are defined as minimum requirements, however higher version/model may be quoted in case of non-availability, end-of-life or end of support of proposed model/version with recommendation/certification letter from OEM.

**2. General:**

- 2.1 The offered equipment by the bidder shall be compact, fully solid state, highly reliable and shall use latest state of the art technology.
- 2.2 The design and selection of the offered equipment by the bidder shall be consistent with the requirements of long-term trouble-free operation with highest degree of reliability and maintainability.
- 2.3 All offered equipment by the bidder shall be manufactured to continuously operate safely without undue heating, vibration, wear, corrosion, electromagnetic interference or any similar problems.
- 2.4** The offered equipment by the bidder shall be designed for continuous operation (24-hours a day and 365-days a year). ***The design life of the equipment shall be a minimum of Eight YEARS.***  
***This life shall be achievable through normal and regular maintenance.***
- 2.5 All types of spares and spare modules of the offered equipment shall be readily available with the bidder during life-time of the equipment, for maintenance, repairs and up keep of the equipment during warranty period.
- 2.6 Offered equipment by the bidder shall undertake and ensure implementation of its offered solution and shall keep its in view the safety and protection of personnel, during normal operation and maintenance or during malfunctioning of any equipment or its sub-component. This shall be ensured as an integrated feature of design, manufacture and installation of offered equipment by bidder.
- 2.7 Offered equipment by the bidder shall ensure adequate protection to be included for ensuring safety of personnel from any possible hazards, including EMI radiation, high voltages, etc.

- 2.8 The offered equipment by the bidder shall furnish the details of EMI and Safety Standards met by his equipment and built-in safety features.
- 2.9 The offered equipment shall be constructed on a modular basis, using plug-in type units and components to the extent possible. Parts subject to failure, wear, corrosion or other deteriorations or requiring occasional inspection, adjustment or replacement shall be made accessible and capable of convenient inspection and removal
- 2.10 Input and output termination cables in offered equipment shall be properly labeled to permit ready identification of the incoming/outgoing wiring.
- 2.11 All interconnecting cables in offered equipment shall also be appropriately labeled to facilitate convenient interconnection and minimize chances of incorrect connection.
- 2.12 All connecting cables required to inter-connect the equipment shall be supplied by the bidder as a part of the offered system. All cables shall be fully assembled, connector pre-terminated and factory tested at the time of supply as part of overall system check.

**3. Mains Power Supply:**

- 3.1 Complete offered equipment shall operate with an un-interrupted AC power 230 Volts ( $\pm 10\%$ ) single phase 50 Hz  $\pm 5\%$ .
- 3.2 Reliable over & under voltage and over current protection circuits shall be provided in the power supply units of offered solution.
- 3.3 The power supply units in complete offered solution shall be self-protecting, and shall protect connected equipment against conducted interference, noise, voltage dips and surges & impulses.
- 3.4 Mains Power Supplies used in offered solution/equipment shall be rugged enough to withstand variation in mains voltage and frequency over a long period of time so that the failures in the equipment due to power supply are minimized.

**4. Installation Standards:**

- 4.1 Installation shall be carried out by technically well qualified and certified personnel as per the requirements.
- 4.2 Contractors shall not outsource any part of the contract to any other vendor/third party contractor without prior permission of AAI. Liability, if anything, arising out of such third-party contracts to any other vendor by contractor shall be to the contractor's account.
- 4.3 AAI shall not be liable on behalf of contractor to any other third-party contractor/ Government of India/State/Regulatory Authorities.
- 4.4 Any liabilities arising out of such third-party contracts by contractor or its men working at site shall be only to contractor's account.

## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

### 5. SCOPE OF WORK:

#### SCOPE AND GENERAL REQUIREMENT FOR S.I.T.C. of NTP Server and GPS Clock

No.	DESCRIPTIONS
<b>1.</b>	<b>Scope of Work:</b>
<b>1.1</b>	<b>Supply, Installation, Integration, Testing, and Commissioning</b> of IP Network, <b>Firewall, NTP Based Time Display System</b> <b>Comprising of</b> NTP Server, GPS Receiver with Antenna, POE based Clocks, Switches, Local Area Network, Passive Components such as OFC, CAT 6 U/UTP, LIUs, Patch Panel, Racks, conduits/trays, Racks, associated accessories etc. system administration terminal associated accessories, etc. using latest in design technology, integrated & equipped with all items / sub-systems/ sub-equipment / accessories as specified in this tender at sites listed in this tender, as per Terms & Conditions and minimum technical requirements/specifications along with 03 years Onsite Operational Performance Maintenance Warranty (OOPMW) followed by 05 Years Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM) inclusive of all spares, components, consumables & other accessories, repair/ replacement, service support etc.
<b>1.2</b>	Integration of the systems/network/components offered under this project with other networks for redundancy or as per AAI site requirements.
<b>1.3</b>	The Contractor shall conduct site survey in consultation with AAI to prepare Network Layout plan, drawing, SLD before delivery of material, AAI observations, change if any shall also be incorporated to meet the requirements of the site. The final Network Layout plan, drawing, SLD etc. once approved by AAI shall be binding on the contractor for implementation, subsequent change if any shall only be made on written consent of AAI through its authorized representative.
<b>1.4</b>	Contractor shall be responsible to carry out installation with no damage to the building, infrastructure, floors, false ceiling, false floor, walls, roof and any other fixtures, fittings at the site. In case it becomes essential to carry out cutting of false floor, false ceiling etc. the contractor/Contractor shall replace/re-do/re-work/restore the false floor, false ceiling, fixture, fitting, wall, roof or any damages with same original materials as at the site at no additional cost to AAI. If the contractor Fails to replace/re-do/re-work/restore any such damage, AAI will deduct an amount worked out to carry out such re-works and AAI's decision in this regard shall be final and binding on the contractor.
<b>1.5</b>	<b>Logical Network Diagram:</b> Logical Network diagram shall be prepared by the Contractor in consultation with AAI and shall be approved/agreed by AAI prior to implementation at the site.
<b>1.6</b>	<b>Impart Training</b> to the Executive of AAI as per the details given in this document.
<b>2.0</b>	<b>ONSITE OPERATIONAL PERFORMANCE MAINTENANCE WARRANTY (OOPMW) AND ONSITE OPERATIONAL PERFORMANCE COMPREHENSIVE ANNUAL MAINTENANCE (OOPCAM) CONTRACT:</b>
a)	36 Calendar Months Onsite Operational Performance Maintenance Warranty (OOPMW) inclusive of all spares, components, consumables & other accessories after successful SAT (Site Acceptance Testing) followed by 60 Calendar Months Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM) inclusive of all spares, components, consumables & other accessories.
b)	The Contractor shall carry out manufacturers prescribed normal, preventive and corrective maintenance on their offered system during the OOPMW and OOPCAM period.
c)	The Contractor shall maintain Corrective, break down visit record at site at AAI premises, and get it counter signed by AAI representatives.
d)	Contractor shall visit AAI premises as many times as Breakdown calls are received and replace all the faulty & functionally not acceptable components/ parts/ LRU's/ functional systems/ displays/ monitors/ network switches/ servers and client workstations at Contractor cost.
e)	Contractor shall be responsible to Manage, maintain, configure, administer, configure/ reconfigure the deployed Network/System/Sub-system and if need arises shall at his own cost obtain OEM support to resolve the software issue from respective system/subsystem OEM, incorporate required configuration changes in the deployed network/system/any sub-system as and when needed by AAI.
f)	Repair of faulty hardware/modules/components/LRU/equipment/nodes, repair & return shall include repair services, spares/components, packing, dispatch, freight & insurance charges etc.
g)	OOPMW and OOPCAMC are inclusive of all spares, consumables and other accessories, the Contractor/ OEM of SYSTEMS shall offer 365x7x24Hrs basis onsite service and maintenance / replacement/ spare support. The complaint shall be lodged by AAI through all types of Toll-free Assistance i.e. by a telephone/mobile number/Email/Fax. Service engineer/representative of the Contractor firm shall attend and resolve the AAI raised complaint/issues within 48 hours of lodging of a complaint regarding degradation /malfunctioning /non-intended operations/ non-optimum performance of a module/ subsystem/ system/set. AAI shall maintain a fault log in respect of each such degradation, malfunctioning, non-optimum performance and restoration of a module/ subsystem/ system/set. All user replaceable spare parts/ LRU's of any of the OEM makes forming part of NTP based Time Display System and accessories modules shall be available with the contractor or its service organization 365 days a year. This service organization shall be capable of shipping/ installing/ replace/ test & restore parts/modules/ subsystem/ system to AAI site at any time during the day / night for restoring Operations at the site. AAI shall allow module

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

	level replacement but shall not allow any kind of component level repairs in NTP based Time Display System accessories at site.
h)	Failure to resolve functionality degradation issues of System at site within 24 hrs. shall result in deduction of <b>1%</b> of Performance bank guarantee amount or from the running bill payable to the contractor as applicable, per Day subject to maximum of 10% per instance, by AAI.
i)	Contractor shall maintain sufficient inventory with its' service organization in Delhi/NCR to meet repair and service support requirements during warranty period.
j)	In case of any breakdown the Contractor' service personnel shall fix the breakdown within 48 hrs. from the time of the fault is logged. The system shall be handed over to AAI for operational use only after a successful Functional Performance Test (FPT) is completed.
k)	Contractor firm must provide an OEM authorization to its firm confirming the compliance and support for the entire period of OOPMW/OOPCAMC with spares, consumables and other accessories & with related functional software & hardware technical specifications of System equipment and terms and conditions.
l)	In case the contractor fails to meet the OOPMW/OOPCAMC maintenance or breakdown requirement, AAI may get the work done from external agency at the cost of the contractor. All such cost shall be deducted from the running bill or from the PBG of the contractor.
<b>3.0</b>	<b>GENERAL REQUIREMENTS OF SYSTEM</b>
3.1	The equipment shall be compact, fully solid state, highly reliable and shall use latest state of the art technology. The design and selection of equipment shall be consistent with the requirements of long-term trouble-free operation with highest degree of reliability and maintainability.
3.2	All equipment shall be manufactured to continuously operate in a safe manner without undue heating, vibration, wear, corrosion, electromagnetic interference or any similar problems.
3.3	The system shall be designed for continuous operation (24 hours a day and 365 days a year). The design life of the equipment shall be a minimum of 8 years. This life shall be achievable through normal and regular maintenance and without major dismantling or overhauling etc.
3.4	The Contractor shall confirm and ensure availability of all types of spares and spare modules during life time of the equipment for maintenance, repair and up keep of the equipment (8 years).
3.5	Health and Safety: Safety and protection of personnel during normal operation and maintenance or during malfunctioning of any equipment shall be ensured as an integrated feature of design, manufacture and installation. Adequate protection shall be included for ensuring safety of personnel but not limited to, from any possible hazards, human exposure to EMI radiation, high voltages, grounding and power distribution, inflammable atmospheres, electro-mechanical detonators, hazardous substances etc. The Contractor shall furnish the details of EMI and Safety Standards met by his equipment's and built in safety features.
<b>4.0</b>	<b>SERVICE LIFE &amp; PRODUCT SUPPORT:</b>
4.1	The Contractor shall ensure availability of spare and software support for the specified design life from the date of SAT.
<b>5.0</b>	<b>DOCUMENTATION</b>
5.1	One set each of soft copy and hard copy of "Operations", "Technical and Maintenance", System Administration", "System Management and Configuration" training manuals for NTP Servers, Switches, Clocks shall be supplied along with each equipment. The Technical and Maintenance manual shall cover: <ul style="list-style-type: none"> <li>• General technical description and theory of operation</li> <li>• Block diagram description up to LRU level</li> <li>• Signal flow diagram</li> <li>• Periodic maintenance checks</li> <li>• Fault diagnosis, Troubleshooting, analysis and repair procedure for each sub system of Time Display System. Further for each subsystem, fault diagnosis and repair procedures including the logical flow diagram for each constituent module, LRU and PCB.</li> <li>• System Administration, Configuration, Management and Monitoring of all the systems/active components/sub-systems/servers/software/devices etc.</li> <li>• Part list along with part number of all the LRUs, modules and PCBs used in the Time Display System etc.</li> </ul>
5.2	The Technical manual shall be submitted well before training for AAI Approval. At any stage any deficiency in the technical documentation shall be removed and revised corrected updated technical manuals shall be provided by the Contractor/contractor.
<b>6.0</b>	<b>TRAINING:</b>
6.1	<b>SYSTEM ADMINISTRATION AND MAINTENANCE TRAINING:</b> The OEM assisted Training for <b>minimum of 10</b> working days to one batch of <b>8</b> trainees. This training shall cover in-depth/detailed topics on installation, integration, testing, maintenance, administration, configuration & management of all subsystems (Both Hardware and Software) of NTP based Time display System and shall include the following: <ol style="list-style-type: none"> <li>1. Network Switches Layer 3 and Layer 2</li> <li>2. Firewall, NMS</li> <li>3. NTP Server</li> <li>4. NTP Clocks</li> <li>5. Other Components of the Network</li> </ol>



### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

6.2	The objective of this training is to impart knowledge and skills to the executives to install, configure, operate and troubleshoot the WRS, layer 2 switched network and various components of this network.
6.3	General Topics to be covered under this training:
a)	<ul style="list-style-type: none"> <li>a. Recovery of Server/Active components from system/software crash, reloading of server software including applications, tools, diagnostic, network components.</li> <li>b. Procedures to monitor/change/replace each and all user replaceable modules, spares etc.</li> <li>c. Use of Diagnostic tools/procedure /interpretations/rectification</li> <li>d. Do 's and Don'ts for System in each site.</li> <li>e. Built System Design/Layout with complete module/accessories details, part numbers and OEM details.</li> </ul>
b)	Networking concepts, Internetworking models, Ethernet networking – concept, media & services, networking topologies, type of networking.
c)	TCP/IP, structure of IP addressing, Private & Broadcast IP Addresses,
d)	Subnet masking: Design, calculate, and apply subnet masks and addresses to fulfill given requirements in IPv4 and IPv6 networks.
e)	MAC Table and MAC Addresses, optimizing required switching hardware, Configuring Switches.
f)	Switching concept, operation of switches, and configuration of switches.
g)	IP Routing, IP Routing Process, Configuring IP Routing, Static Routing configuration, Dynamic Routing configuration etc.
h)	VLAN: Basics of VLAN, creating & configuring VLAN, VLAN Tagging, Routing between VLAN'S.
i)	Understand, configure Dynamic Host Configuration Protocol (DHCP) for IPv4 and IPv6 networks.
j)	Understand operations and benefits of virtual private networks (VPNs), Creating, configuring VPNs.
k)	Network Security: Basic concept, Authentication, Authentication protocols/mechanism, Firewall, SSL & IPSEC, tunneling etc.
l)	Monitoring network and to troubleshoot network operations using SNMP, NetFlow / sflow /syslog etc.
7.0	<b>INSTALLATION STANDARDS:</b>
7.1	Installation shall be carried out by technically well qualified, experienced and certified personnel as per the requirements of the tender.
7.2	All Terminating connectors, line units and accessories for OF cable shall be supplied and installed as per site requirements.
7.3	All incoming and outgoing cable connectors/terminators from/to any Rack/device shall be appropriately numbered, marked/ tagged for easy identification & tracing.
7.4	All data/OF Cables, power cables shall be fixed to a trays/rack using weather proof ties etc.
7.5	On award of contract, the contractor/Contractor shall survey the sites and submit schedule plan for complete project execution clearly defining the milestone for various activity which shall be complied.
8.0	<b>Software Support:</b>
8.1	The Contractor and OEM shall provide life time support for the offered software/applications for upgrades major or minor, software patches, extensions, drivers, security patches etc. without any additional cost to AAI.
9.0	<b>Miscellaneous</b>
9.1	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system.
9.2	The Technical Manual shall be provided containing all technical details, guidelines, procedure etc. for configuration, management and troubleshooting of the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc.
9.3	Contractor shall provide escalation matrix to resolve technical issues during installation, OOPWM and OOPCAM period

## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

### MINIMUM SPECIFICATIONS AND QUALITATIVE REQUIREMENT FOR S.I.T.C. of NTP Server and GPS Clock

S. No.	DESCRIPTION
<b>B.0</b>	<b>SITC OF NETWORK ACTIVE COMPONENTS/DEVICES AND ASSOCIATED ACCESSORIES.</b>
<b>1.0</b>	<b>Introduction</b>
1.1	<p>Airport Authority of India intends to create Local Area Network Infrastructure at its ATS Complex comprising of distributed buildings. These infrastructures will provide IP connectivity for various services sharing physical network while maintaining desired isolation. The services/applications networks shall be for IP Telephony &amp; Voice network, Video/CCTV streams and Data network.</p> <p>The proposed networks shall be optimized for the present services and shall be upgradable to meet the future needs of the organization.</p> <p>The proposed networks shall be capable of providing virtualized services to IP unicast and multicast applications. The networks must be highly dependable, resilient and provide desired recovery/convergence in the event of any switch/router, node or link failure.</p>
<b>2.0</b>	<b>General Requirements:</b>
2.1	<b>High Availability:</b> The network being deployed shall support fault tolerant, resilient, fast converging networking and these shall be kept in all aspects of Design, selection of networking devices and implementation & operation. LAN switches must incorporate latest LAN technologies.
2.2	<b>Resiliency and Convergence:</b> The network must be designed, implemented, configured with technologies/hardware/Software/ interfaces /protocols to recover/re-converge in less than 50 milliseconds from failure of a link/switch/network components. Converged backbone Network Infrastructure shall be the building block to achieve full resiliency and sub-50 millisecond failover for any part of the network.
2.3 (a)	<b>Open Standards:</b> The LAN design shall deploy open Standards/protocols and use IEEE or IETF certified protocols to allow interoperability with other network devices supporting the same standards. However, to achieve resiliency as defined in this document, if require use of protocol which may be specific to an OEM may be used. The details of such protocol and their limitation/restrictions with respect to interfacing with other make hardware/network components must be specified and the Contractor/OEM shall undertake to support in integrating with other systems during life of the product.
2.3 (b)	Protocols/Standards mentioned for network Switches are to meet intended functionalities /features/requirements of the system.
2.4	<b>Reliability and Maturity of Product/Technology:</b> The offered system/equipment/devices/appliances/software/technology shall have a design life of 8 years.
2.5	<b>Scalability:</b> The networks design/offered shall be scalable to allow smooth future growth. Scalability shall also provide the support for future applications, bandwidth requirements, users, technologies, etc. without the need for major restructuring/upgrades.
2.6	<b>Security:</b> Network shall be capable of segregating users / tenants and services in isolated zones over the same physical network. Devices/components shall have capability of protecting network from IP hacking, intrusion, server/client application attack etc.
2.7	<b>Architecture:</b> The network shall be designed to deliver next generation architecture and resiliency and shall support virtualization of Layer 2 & Layer 3 based services.
2.8	<b>Multicast Enabled:</b> Multicast will be a key component of many of the services running on the network. The solution shall support multiple virtual IP multicast routed domains with complete traffic separation between them.
2.9	<b>High Performance:</b> The Network shall be able to support latency sensitive applications by using low latency switches. In addition, the proposed network needs to be fully active-active load sharing.
<b>2.10</b>	<b>In Service Software upgrade:</b> All Network devices shall have In Service Software upgrade and graceful restart.
2.11	<b>Manageability:</b> The offered solution shall provide a method of Centralized control /management of Switches through Console Interface/ Web Interface. All the Switches shall support single point of management, configuration roll out and troubleshooting with Instant Access or equivalent technology. All management features shall be integrated in all the switches (the backbone or the edge /access switch). Configuration and management of the network device shall be easy & simple.
<b>2.12</b>	<b>Switch and Optical Fibre Transceivers</b> shall be of the same make.
2.13	<b>License:</b> Licenses applicable for the offered Hardware, Software for any of the explicit/implicit requirement mentioned in the document shall be provided for the life time of the Equipment/system by the Contractor and shall be issued and registered in the name of AAI.
<b>2.14</b>	<b>Installation Standards:</b>
a)	Network Cabling / wiring shall be structured and this interconnect network shall be certified for all the sub components used to build the network.
b)	The contractor shall submit Layout drawings for the complete project, SLDs, cable/OFC route drawings, various plans associated with the implementation of the project.
c)	The contractor before commissioning shall hand over site specific data, configured parameter of each active components/servers/devices/nodes, Routing schemes, Configured VLANs, Configured VPNs and all other associated database/ documents/files, backup files, recovery media etc. to AAI.



### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

d)	To ensure high availability and high reliability, the offered equipment designed/deployed by the Contractor and its OEM partner shall employ the most suitable engineering techniques, materials and dependable components, field proven design and rigorous inspection during manufacturing, employ best practices/ standard during installation & testing.
e)	All cable incoming/outgoing, connectors from any Rack/device shall be appropriately numbered, marked and tagged for easy identification.
<b>2.15</b>	<b>Software Support:</b>
a)	The Contractor and OEM shall provide life time support for the offered software/applications for upgrades major or minor, software patches, extensions, drivers, security patches etc. without any additional cost to AAI.
<b>2.16</b>	<b>Warranty: OOPMW 36 Calendar Months and 60 Calendar Months OOPCAM shall hardware warranty, software warranty and shall include:</b>
a)	OOPMW and OOPCAMC are inclusive of all spares, consumables and other accessories, the Contractor shall offer 365x7x24Hrs basis onsite service and maintenance / replacement/ spare support. The complaint shall be lodged by AAI through all types of Toll-free Assistance i.e. by a telephone/mobile number/Email/Fax. Service engineer/representative of the Contractor firm shall attend and resolve the AAI raised complaint/issues within 48 hours of lodging of a complaint regarding degradation /malfunctioning /non-intended operations/ non-optimum performance of an Equipment/subsystem/ system/components etc.
	Contractor shall ensure to provide L2 & L3 support from the respective OEM for every ticket logged by the User during OOPWM and OOPCAM
<b>3.0</b>	<b>CORE SWITCH</b>
<b>3.1</b>	<b>Port Density and Architecture</b>
a)	High availability configurable.
b)	All field replaceable modules shall be hot swappable (PSUs / fans) from day 1.
c)	Each core switch shall configure with complete redundancy in key components including Power Supplies, fans.
d)	Switch shall be configured to provide Wire-Speed Non-Blocking Switching and Routing Performance at Layer 2 and Layer 3 on all ports.
e)	The switch shall have <b>508 Gbps</b> or more Switching Fabric with <b>380 Mpps</b> or more forwarding rate
f)	The switch shall have <b>minimum 24 Fibre Ports</b> supporting <b>1GE and 10 GE SFP+</b> SM fibre Transceiver. Switch shall be fully loaded with 10GE SM Fibre transceivers.
g)	<b>The switch shall also have minimum 12 Ethernet port (RJ45) each supporting 1 GE</b>
h)	Switch and Transceivers shall be of same make.
i)	Shall have In Service software upgrade and graceful restart.
j)	Core switch shall be connected using 10GE or higher SFP+ ports. Transceiver and other accessories required for this shall be supplied, installed, tested and commissioned by the contractor to bring the Core switches in Active – Active mode.
<b>3.2</b>	<b>PERFORMANCE</b>
a)	Extensive wire-speed traffic classification for ACLs and QoS.
b)	9KB Jumbo frame size
c)	Wire-speed multicasting
d)	32K or higher MAC addresses
e)	Minimum 4096 VLANs and VLAN Ids 4 K
f)	Minimum 4 K multicast routes and 16 K unicast routes IPv4
g)	Minimum 4 K multicast routes and 8 K unicast routes IPv6
h)	The Core Switch shall provision full IPv6 features like, MLD v1/v2, OSPFv3, VRRPv3 etc. and IPv6 management from day 1.
<b>3.3</b>	<b>Reliability:</b>
a)	Dual hot swappable Power supply Unit with 1 + 1 redundancy (Populated)
b)	Hot swappable fan modules
c)	Switches shall have graceful restart for OSPF/BGP
d)	Mean Time between Failures: 50,000 hours or higher/more
<b>3.4</b>	<b>Resiliency:</b>
a)	Shall Support VRRP v2, VRRP v3.
b)	Link Aggregation (IEEE 802.3ad)
c)	Loop Protection and Loop Detection
<b>3.5</b>	<b>IEEE Standards</b>
a)	Necessary protocols, software, technology etc. shall be provided in the Switch to meet the Functional/Technical/Resiliency/Convergence requirement of the network as defined in the tender.
b)	Internet Group Management Protocol v2 (IGMPv2), PIM-SM, OSPFv2 & OSPFv3
c)	Configurable Guest and Auth-Fail VLANs
d)	RADIUS, RADIUS Accounting
e)	Tunnel Protocol Support
f)	IEEE 802.1p Priority Tagging
g)	DiffServ Precedence for 8 queues per port or equivalent

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

h)	DiffServ Architecture
i)	Multiprotocol Extensions for BGP-4
j)	Border Gateway Protocol 4 (BGP-4)
k)	Monitoring tools using sflow or equivalent
l)	DHCP Server
<b>3.6</b>	<b>Routing</b>
a)	Policy based routing from day 1
b)	Shall have VRRP V3 from Day 1
c)	Shall have OSPF routes from day 1
d)	Shall have BGPv4
e)	Virtual Routing and Forwarding (VRF) or Equivalent
f)	HSRP for IPv6 or equivalent
g)	IPv6 routing from day 1, all the necessary software and hardware should be provisioned.
h)	Shall have 4 K or more IPv4 routes in OSPF
i)	Shall have 4 K or more IPv6 routes in OSPF
j)	Shall have 4 K or more BGP routes
<b>3.7</b>	<b>IPv6 Features</b>
a)	IPv4 and IPv6 Dual Stack
b)	IPv6 Management via Ping, Trace Route, Telnet and SSH
c)	Static Unicast Routes for IPv6
d)	DNS Extensions to support IPv6
e)	Architecture for IPv6 Unicast Address Allocation
f)	Neighbour Discovery for IPv6
g)	Transmission of IPv6 Packets
h)	Connection of IPv6 Domains via IPv4 Clouds
i)	Internet Control Message protocol (ICMPv6)
j)	IPv6 Addressing Architecture
<b>3.8</b>	<b>Multicast Support</b>
a)	PIM-SM, IGMPv3, LLDP-MED
b)	Multicast Routing Protocols
c)	IGMP & MLD snooping,
<b>3.9</b>	<b>Security</b>
a)	802.1x support
b)	Dynamic or Private VLANs
c)	NAC support (Open standards) or Equivalent
d)	BPDU Protection and STP Root Guard
e)	Switch shall provide the ability to monitor events and take corrective action proactively
f)	RADIUS and RADIUS accounting
g)	MAC address filtering and MAC limiting functionality.
h)	Detection of Denial of Service (DoS) attack.
i)	DHCP snooping, Dynamic ARP Inspection (DAI), IP source guard
j)	Tri-authentication: MAC-based/web-based and IEEE 802.1x
<b>3.10</b>	<b>Quality of Service</b>
a)	Policy based QoS features
b)	Highly configurable traffic classification
c)	Mixed scheduling, to support complex traffic queuing requirements
d)	8 QoS queues per port and support for Voice VLAN
e)	Bandwidth monitoring
f)	Access Control Lists (ACLs) and IEEE 802.1p Priority Tagging
<b>3.11</b>	<b>Management:</b>
a)	GUI, Telnet, Industry-standard CLI with built-in Help-menu
b)	External memory card / USB or equivalent, allowing switch firmware, configurations to be stored for backup and distribution to other switches
c)	Out of band 10/100/1000 Ethernet management port and console management port
d)	Shall be provisioned with out of band management for monitoring, alerting, reporting, restart, configure BIOS, management etc. This shall be done using separate LAN connectivity to the administrator.
e)	SSH and SNMPv3 for secure management
f)	RADIUS Authentication, NTP and Syslog and sFlow or equivalent
g)	Port mirroring and RMON / NETFLOW / SFLOW or equivalent technologies.
h)	Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure
<b>3.12</b>	<b>Approvals and Certifications:</b>
a)	Certification EAL2/NDPP or equivalent MII (Make in India)
b)	Certifications Hardware: UL, cUL or equivalent MII (Make in India)

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

c)	Restrictions on Hazardous Substances (RoHS) Compliance or equivalent
<b>3.13</b>	<b>Environmental Specifications:</b>
(a)	Operating Temperature Range: 0°C to 40°C or better
<b>3.14</b>	<b>Miscellaneous</b>
a)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system.
b)	The Technical Manual shall be provided containing all technical details, guidelines, procedure etc. for configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc.
c)	All Licenses, User ids for technical support shall be in the name of AAI.
d)	OEM shall provide escalation matrix to resolve technical issues during installation and warranty period.
e)	<i>Contractor shall provide an OEM MAF &amp; authorization confirming the compliance to above technical specifications, along with the OEM authorization letter.</i>
<b>4.0</b>	<b>Distribution /ACCESS SWITCH:</b>
	Preferred make: Access switch shall be of the same make as that of Core switch
<b>4.1(a)</b>	<b>Port Density and Architecture</b>
a)	All field replaceable modules shall be hot swappable (PSUs / fans modules) from day 1.
b)	Switch shall be configured to provide Wire-Speed Non-Blocking Switching and Routing Performance at Layer 2 and Layer 3 on all ports.
c)	Each switch shall configure with complete redundancy in key components including Power Supplies so that there is no single point of failure in the switch.
d)	Shall have 02 Nos fibre ports to support 1G SFP & 10G SFP+. Switch shall be fully populated with 10 GE SM Fibre Transceiver.
e)	Shall be equipped with 24 Nos of 1G Base T Port POE+ as per IEEE 802.3at.
f)	One console port.
g)	Shall support 802.3ad (LACP) with up to 6 ports
h)	Wire speed non-blocking architecture & Wire-speed multicasting for IPv4 and IPv6 traffic on all ports.
i)	The Switch shall be enabled/provided with Stacking or equivalent Technology to operate as single virtual logical switch.
j)	The switch shall incorporate required technology /protocol to avoid/eliminate forwarding the network traffic in network loop.
k)	Switch and Transceivers shall be of same make.
l)	The switch shall be a basic layer 3 Switch.
<b>4.2</b>	<b>Performance</b>
a)	Forwarding Rate: 65 Mpps or higher
b)	Switching Fabric 88 Gbps or higher
c)	Extensive wire-speed traffic classification for ACLs and QoS
d)	9KB Jumbo frame size
e)	Wire-speed multicasting on all ports.
f)	16 K or higher MAC addresses,
g)	Minimum 4 K multicast routes and 8 K unicast routes IPv4
h)	Minimum 2 K multicast routes and 4 K unicast routes IPv6
i)	Active 4K VLANs and 4 K VLAN Ids
j)	Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure
<b>4.3</b>	<b>Reliability</b>
a)	MTBF: Min 50,000 hours or higher /more
b)	Dual hot swappable PSUs with 1 + 1 redundancy (Populated)
<b>4.4</b>	<b>IEEE Standards</b>
a)	Necessary protocols, software, technology etc. shall be provided in the Switch to meet the Functional/Technical/Resiliency/Convergence requirement of the network as defined in the tender.
b)	Configurable Guest and Auth-Fail VLANs.
c)	RADIUS
d)	Tunnel Protocol Support
e)	IEEE 802.1p Priority Tagging
f)	DiffServ Precedence for 8 queues per port or equivalent
g)	DiffServ Architecture
h)	Monitoring tools sFlow or equivalent
i)	DHCP Server
j)	Internet Group Management Protocol v2 (IGMPv2), PIM-SM,
k)	classification by protocol / port in the switch/network
l)	VLAN tagging in the switch/network.
m)	Double tagging shall be available in network.

### S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

<b>4.5</b>	<b>Resiliency</b>
a)	Link Aggregation (802.3ad) groups
b)	Loop Protection and Loop Detection
<b>4.6</b>	<b>Routing</b>
	Switch shall have L3 feature like OSPF V2, OSPF v3, BGP,
a)	Policy based routing.
b)	Static Routing.
c)	IPv6 routing support from day 1, all the necessary software and hardware shall be provisioned.
d)	Minimum 4 K multicast routes and 16 K unicast routes IPv4
e)	Minimum 4 K multicast routes and 8 K unicast routes IPv6
<b>4.7</b>	<b>IPv6 Features: -</b>
a)	IPv4 and IPv6 Dual Stack
b)	IPv6 Management via Ping, Trace Route, Telnet and SSH
c)	Static Unicast Routes for IPv6
d)	DNS Extensions to support IPv6
e)	Architecture for IPv6 Unicast Address Allocation
f)	Neighbors Discovery for IPv6
g)	Transmission of IPv6 Packets
h)	IPv6 Router Alert Option
i)	Internet Control Message protocol (ICMPv6)
j)	IPv6 Addressing Architecture
<b>4.8</b>	<b>Multicast Requirements:</b>
a)	Multicast routing protocol PIM-SM
b)	LLDP-MED,
c)	MLD snooping, Multi VLAN Registration (MVR)
d)	IGMP, IGMPv3.
<b>4.9</b>	<b>Security</b>
a)	802.1x support
b)	Dynamic & Private VLANs
c)	NAC support (Open standards) or Equivalent
d)	BPDU Protection and STP Root Guard
e)	Switch should provide the ability to monitor events and take corrective action proactively.
f)	RADIUS/ TACACS + and RADIUS accounting.
g)	MAC address filtering and MAC limiting functionality.
h)	Detection of Denial of Service (DoS) attack.
<b>4.10</b>	<b>Quality of Service</b>
a)	Policy based QoS features
b)	Highly configurable traffic classification
c)	Mixed scheduling, to support complex traffic queuing requirements
d)	8 QoS queues per port and support for Voice VLAN
e)	Bandwidth monitoring. /metering
f)	Access Control Lists (ACLs) and IEEE 802.1p Priority Tagging
<b>4.11</b>	<b>Management:</b>
a)	GUI, Telnet, Industry-standard CLI with built-in Help-menus, GUI through NMS
b)	An External memory card /USB or equivalent, allowing switch firmware, configurations to be stored for backup and distribution to other switches
c)	Console management Port.
d)	SSH and SNMPv3 for secure management
e)	RADIUS Authentication, NTP and Syslog and sFlow or equivalent
f)	Port mirroring and RMON (4 Groups)
g)	Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure.
<b>4.12</b>	<b>Approvals and Compliances</b>
a)	Certification EAL2/NDPP or equivalent MII
b)	Certifications Hardware: UL, cUL or equivalent MII
c)	Restriction of Hazardous Substances (RoHS) Compliance and Energy Efficient Ethernet compliant (EEE) compliance or equivalent
<b>4.13</b>	<b>Environmental Specifications:</b>
a)	Operating Temperature Range: 0°C to 40°C or better
<b>4.14</b>	<b>Miscellaneous</b>
a)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system.
b)	The Technical Manual shall be provided containing all technical details, guidelines, procedure etc. for

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

	configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc..
c)	All Licenses, User ids for technical support shall be in the name of AAI.
d)	OEM shall provide escalation matrix to resolve technical issues during installation and warranty period
e)	<i>Contractor shall provide an OEM MAF &amp; authorization confirming the compliance to above technical specifications, along with the OEM authorization letter.</i>
<b>5.0</b>	<b>Network Access Control (NAC)/AAA SERVER:</b>
a)	NAC/AAA Server shall have hot swappable power supply
b)	Shall be licensed to minimum 50 concurrent end-user/end-points and scalable to 100.
c)	Shall be licensed to support at least 50 authenticators both, wired & wireless (Network devices).
d)	802.1X Based Device Authentication.
e)	MAC Based Authentication.
f)	Captive portal Access.
g)	Shall be Unix/Linux/BSD based.
h)	Certificate based authentication.
i)	Encryption based on Digital Signature algorithm or equivalent functional encryption protocols.
j)	Backend authentication mechanisms into Radius (Proxy) and Active Directory.
k)	Shall have the ability to load external certificates for TLS authentication.
l)	Standards-based and vendor- agnostic, interfacing seamlessly with network access equipment from different manufacturer/vendors.
m)	Shall adhere to Radius / AAA open standards.
n)	Authentication Protocols to support EAP - TLS, TTLS, PAP and MD5
o)	Shall be compatible and interoperable with current network configurations and shall support future network configurations.
p)	Shall seamlessly integrate with the switching solution proposed for AAA and Dynamic VLAN allocation for roaming user profiles
q)	Dynamic Statistics and reports to track / View all the authentication requests / track the duration of user connection with Radius accounting
r)	Provide high level visibility to Administrators to track who logged onto or disconnected from the RADIUS server / network
s)	Shall support IPv6
t)	Shall have the ability to support complex rule sets based on; -Username -Inbound User Attributes -Inbound Authenticator Attributes -User Group membership -Day and Time and Day
u)	Shall have the ability to configure custom defined outgoing radius attributes.
v)	Shall generate Reports on authentication statistics
w)	In case Contractor proposes 3rd party Radius server, the proposed solution shall provide all the interoperability reports certified by both the RAIDUS Server vendor and Network switching manufacturer on seamless interoperability
x)	Shall support for Web based user authentication.
y)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system.
z)	The Technical Manual shall be provided containing all technical details, guidelines, procedure etc. for Configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc.
aa)	OEM shall provide escalation matrix to resolve technical issues during installation and warranty period
ab)	Certification EAL2/NDPP or equivalent MII
ac)	Certifications Hardware: UL or equivalent MII
<b>6.0</b>	<b>FIREWALL</b>
<b>6.1</b>	<b>General Requirements:</b>
a)	Shall be Appliance based Multi-function Firewall providing Firewall, NAT, Intrusion Prevention system (IPS), Antivirus and content Filtering from day 1 including Licenses.
b)	2 X 1 Gigabit Ethernet SFP ports.
c)	4 Nos of 10/100/1000 Base-T Gigabit Ethernet ports with auto sensing.
d)	The platform shall be based on real time, secure embedded operating system
e)	The device shall support IPv6
f)	Hot swappable redundant power supply
g)	Shall support Configurable Security policies for each virtual system.
h)	Shall provide Http, Https, SSH, Telnet, SNMP based management console for managing and configuring



### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

	various components of the firewall appliance.
i)	The Firewall Appliance shall be rack mountable.
j)	License shall be for life time of the system.
<b>6.2</b>	<b>PERFORMANCE REQUIREMENTS:</b>
a)	Firewall shall have Multi-protocol throughputs of 250 Mbps or Better.
b)	Firewall shall have 3DES, AES – IPSEC VPN throughput of at least 50.0 Mbps or more
c)	Shall have IPS Throughput of 100.0 Mbps or better
d)	Minimum 128 concurrent VPN peers both IPsec & SSL.
e)	Shall support concurrent session of at least 64 K
f)	Shall support new session per second of at least 6,000
g)	VLAN 1024 or more.
<b>6.3</b>	<b>Networking &amp; System:</b>
a)	The platform shall support the standards-based Link aggregation technology (IEEE 802.3ad) to achieve higher bandwidth.
b)	IEEE 802.1q VLAN Tagging for 1024 VLANs supported.
c)	Dynamic Routing Protocol for RIP1 & 2, OSPF, OSPFv3, BGP4,
d)	Static, Policy Based, and Multicast routing
e)	Client to Site VPN Tunnels up to 256
f)	Minimum 50 or more SSL VPN users
g)	Routing over IPsec Tunnels
h)	IPv4 and IPv6 routing
i)	VRRP
j)	Multicast Features: Multicast Listener Discovery (MLD), PIM-SM, IGMP v1/v2/v3, Source Specific Multicast (SSM)
<b>6.4</b>	<b>Operating System &amp; Management Requirements:</b>
a)	Upgradeable via Web or TFTP
b)	Shall be easy to backup and restore via GUI and CLI to/from local PC, remote management or USB disk.
c)	Console, Telnet and Web management.
d)	System shall support profile-based login account administration, offering gradual access control such as for Policy Configuration or Log Data Access
e)	Limit remote management access from certain trusted networks or hosts with corresponding administrator account
f)	Facilitate administration audits by logging detailed activities to event log for management & configuration updates
g)	Shall support SNMPv2 and SNMPv3
h)	Real-time traffic-interface/sub interface statistics.
<b>6.5</b>	<b>FIREWALL REQUIREMENTS:</b>
a)	Integrated Traffic Shaping / QoS functionality
b)	DHCP server & DHCP Agent functionality
c)	Network address translation (NAT).
d)	Policy based NAT (Static / Dynamic)
e)	Inbound Port Forwarding.
f)	IPv6 ACL to implement security Policy for IPv6 traffic
g)	All internet applications shall be supported for filtering like Telnet, FTP, SMTP, HTTP, DNS, SIP, DHCP, SNMP, H.323, RPC BGP, NFS, ICMP, IMAP etc.
h)	Shall be able to inspect HTTP and FTP traffic when these are deployed using non-standard ports (i.e. when HTTP is not using standard port TCP/80)
i)	TLS, SSL Decryption without affecting the system performance.
j)	Class-based queuing with prioritization
k)	Queuing based on VLAN, Filters and Bundles.
l)	Marking, policing, and shaping.
m)	Protection against server application attacks and client application attacks
n)	Inbound and outbound application policies.
o)	Inbound and outbound identity policies.
p)	Minimum 50 IPs/User licenses for Firewall / VPN (IPsec & SSL)/ IPS/WCF.
q)	Stateful protocol signatures with protocol anomaly detection.
r)	Tunnels (GRE, IP-in-IP, IPsec).
s)	AAA using RADIUS or equivalent.
t)	Shall have Stateful Firewall
u)	Packet Filters
v)	MD5 and SHA-1 authentication
<b>6.6</b>	<b>NETWORK INTRUSION DETECTION &amp; PREVENTION REQUIREMENTS:</b>
a)	Network attack detection.

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

b)	Prevent denial of service and Distributed Denial of Service attacks.
c)	Shall have a built-in Signature and Anomaly based IPS engine.
d)	Signature based detection using real time updated database.
e)	Anomaly based detection.
f)	The device shall allow administrators to create Custom IPS signatures
g)	Shall have Configurable IPS filters to selectively implement signatures based on severity, target (client/server), protocol, OS and Application types.
h)	Automatic security updates directly over the internet. (i.e. no dependency of any intermediate device)
i)	Security check updates shall not require reboot of the unit.
j)	Attack recognition inside IPv6 encapsulated packets.
k)	User-defined signatures with Regular Expressions.
<b>6.7</b>	<b>CONTENT FILTERING REQUIREMENTS:</b>
a)	Shall have integrated Web Content Filtering solution.
b)	URL filtering functionality with minimum of 75 pre-defined categories.
c)	Creation of custom URL categories for allowing/blocking specific destinations as required by user.
d)	Enable or disable Web Filtering as per firewall policy or based on firewall authenticated user groups for both HTTP and HTTPS traffic.
e)	Shall be able to block web plug-ins such as ActiveX, Java Applet, and Cookies.
f)	Shall include Web URL block, Web Exempt List
g)	The solution shall allow administrators to create multiple new local URL filtering categories besides dynamic categories.
<b>6.8</b>	<b>IPSEC VPN Requirements:</b>
a)	The IPSEC VPN and SSL VPN capability shall minimally attain Internet Computer Security Association (ICSA) Certification or equivalent
b)	The proposed system shall comply/support industry standards, L2TP, PPTP, IPSEC, OpenVPN and SSL VPN.
c)	Shall have IPSEC (DES, 3DES, AES) encryption/decryption, SSL encryption/decryption.
d)	The system shall support the following IPSEC VPN capabilities: <ul style="list-style-type: none"> <li>• Multi-zone VPN supports</li> <li>• IPSec, ESP security Supports Aggressive and Dynamic mode</li> <li>• Support perfect forward secrecy group 1 and group 2 configuration</li> <li>• MD5 or SHA1 authentication and data integrity</li> <li>• Automatic IKE (Internet Key Exchange) and Manual key exchange</li> <li>• Supports NAT traversal</li> <li>• Supports Extended Authentication</li> <li>• Supports Hub and Spoke architecture</li> <li>• Supports Redundant gateway architecture</li> <li>• DDNS support</li> </ul>
<b>6.9</b>	<b>SSL VPN Requirements:</b>
a)	The Firewall shall support at least Tunnel mode for remote computers that run a variety of client and server applications
b)	The system shall provide SSL VPN tunnel mode that supports 32 and 64-bit operating systems.
<b>6.10</b>	<b>Antivirus Requirements:</b>
a)	The Antivirus capability shall minimally attain Internet Computer Security Association (ICSA) AV Certification or equivalent
b)	Shall be able to scan HTTP, HTTPS, SMTP, POP3, IMAP protocols and block, allow or monitor using based on firewall policy
c)	Shall provide ability to scan, allow, block and intercept (allow but quarantine) attachments or downloads according to file extensions and/or file types as per firewall policy.
d)	The proposed system shall be able to block or allow oversized files based on configurable thresholds for each protocol types and per firewall policy.
e)	The solution shall be capable scanning Encrypted VPN tunnel traffic originating for virus.
<b>6.11</b>	<b>CERTIFICATIONS</b>
a)	The Firewall shall be ICSA Labs certified for ICSA 4.0 or EAL4 certified or Equivalent MII
b)	The IPS capability shall minimally attain Internet Computer Security Association (ICSA) NIPS or NSS Certification or equivalent MII
<b>6.12</b>	<b>MISCELLANEOUS</b>
a)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system. Copy of registration shall be shared with AAI.
b)	The Technical Manual shall be provided containing all /most technical details, guidelines, procedure etc. for configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc.

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

c)	All Licenses, User ids for technical support shall be in the name of AAI, Copy of License Registration with User Id shall be shared with AAI
d)	OEM shall provide escalation matrix to resolve technical issues during installation and warranty period
<b>7.0</b>	<b>NETWORK TIMING PROTOCOL SERVER:</b>
<b>a)</b>	Multi GNSS reception of GPS, GLONASS etc. for improved reliability and redundancy.
b)	GPS satellite supported L1/L2/L5 frequency NTP SERVER to maintain and synchronize time across the IP based Time display clocks.
c)	Shall be STRATUM 1 compliant (ITU-T G.811) NTP Server with GPS and Stratum 2 on hold over.
d)	NTP server shall act as a master clock in the network to which other clients shall interconnect over the network using NTP client software and synchronize periodically.
e)	It shall take input from GPS/GLONASS satellites using externally mounted antenna and give outputs of NTP on GbE Ports IPv4/IPv6 Ethernet port, RS 485 port/ RS232 port and 1 PPS signal for dependent systems synchronization.
f)	Shall Synchronize minimum of 100,000 or more clients at default NTP polling frequency.
g)	Four Nos 1 GbE ports (RJ45/SFP) Auto-Sensing Network Interfaces. Fibre ports shall be fully loaded with SM Fibre transceiver module.
h)	One Console/management Port for Configuration and Status
i)	Shall have system status monitoring through digital display.
j)	The NTP system shall allow basic configurations of the system by the user.
k)	Shall be compliant to Internet Protocol (IP) IPv4, IPv6.
l)	Shall support Timing Protocols like NTP v2, NTP v3, NTP v4, SNTP v3, SNTP v4, NTP MD5 Authentication.
<b>m)</b>	Configuration and Monitoring using HTTPS/SSH/FTP/SNMPv1, SNMPv2.
n)	Monitoring and Reporting SNMP v1/v2.
o)	GPS/GNSS 32 Channel Multi-GNSS receiver for GPS, GLONASS etc.
p)	Time-Receiver Autonomous Integrity Monitoring. High Sensitivity Outdoor Antenna Operation.
<b>q)</b>	GPS/GNSS Antenna for outdoor use, pole mounts with Connecting RF cable of minimum Length 30 meters.
r)	Lightening/Surge Protection device having surge handling capability of 20KA or better for 8/20 microsecond pulses (multiple) shall be provided to protect for any surge entry through Cables from Antenna.
s)	Shall show synchronization status on the front panel using digital display
t)	Dual redundant Power supply.
u)	GPS Receiver accuracy < 30 nanoseconds, when Locked.
v)	Accuracy to UTC < ± 30 ms using GPS and internal OCXO
w)	Stratum 1-time stamp over Ethernet
<b>8.0</b>	<b>NTP BASED SINGLE SIDED 100 mm LED DIGITAL DISPLAY CLOCK</b>
a)	The display size 100mm, format HH:MM: SS in green/yellow/amber display colour, selectable in 12/24 Hours' time format.
b)	The digital clock shall have elegant and slim clock frame, made of aluminium, powder coated in black colour and front cover made of dark plexi-glass (antiglare) for best readability over a wide viewing angle of 160 degree
c)	The digital clock shall have mechanism for configuration of all parameters.
d)	Configuration through DHCP/manual or through telnet and monitoring through SNMP.
e)	Synchronization input: NTP, Self-setting time code from any make standard NTP server.
f)	Powering: PoE/POE+.
g)	The digital clock shall have internal time base and shall maintain internal RTC with battery back for at least 1 hours or more in case of Power failure and shall be capable to synch with NTP on restoration of power/network.
h)	The digital clock shall have accuracy better than +/- 0.1 s to the incoming synchronization signal and +/- 0.3 s per day without synchronization in holdover mode.
i)	The digital clock shall indicate synchronization state by visual indication.
j)	The digital clock shall indicate un-synchronization state by means of flashing visual indication.
k)	The digital clock shall have configurable internal Time zone table
<b>l)</b>	The digital clock shall have automatic or manual display brightness control configurable in steps.
m)	Wall mounting provision/wall bracket mounting/Ceiling suspension shall be provided for clock depending on the actual site conditions.
n)	All the digital clock shall be fully accessible through GUI based Network Management System for administration, supervision and maintenance
o)	Operating conditions <ul style="list-style-type: none"> <li>- Temperature: - 5 to +45 °C</li> <li>- Humidity: 0 to 80% (without condensation)</li> <li>- protection degree: IP 54 (Protection against dust &amp; Water)</li> </ul>
<b>p)</b>	Character display Size 100 mm



### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

q)	The clock must confirm to compliance such as Electrical Safety, EMC, Environmental compliance as follows: - - Electrical safety: EN 60950 or equivalent - EMC: EN 55022 (2010), class B; EN 55024(2010); EN 50121-4/Cor. (2008) or equivalent - Ingress Protection: IP 54 EN 60529 or equivalent ROHS compliant
<b>9.0</b>	<b>ADMINISTRATIVE LAPTOP:</b>
a)	64-bit, Processor, fully installed Dual Core, operating at base Frequency 2.0 GHz, 8 MB or higher cache
b)	RAM: 16.0 GB SDRAM, DDR 4, 2400 MHz
c)	Hard Disk: 1 TB SSD
d)	Display/Monitor: 13 inch or more, HD resolution (1366 X 768), Anti-Glare,
e)	Dual Display Support: Yes.
f)	Minimum 03 Nos (Three) V 2.0 & V 3.0 USB ports. At least One to be USB 3.0
g)	Inbuilt Stereo Speakers.
h)	One (1) HDMI port
i)	One Number of Integrated Gigabit Ethernet (10/100/1000) Card,
j)	Wifi compatibility: Fully ready compatible with IEEE802.11a/b/g/n,
k)	Integrated Bluetooth
l)	AC adaptor with power cord
m)	Input: 100 V to 240 V AC , 50 Hz/60 Hz
n)	Lithium Ion battery-with Minimum Back Up time 4 hours.
o)	64 Bit Microsoft windows 10, Professional with License.
p)	MS Office latest Professional with License.
q)	Good quality Executive, Nylon carrying case.
<b>10.0</b>	<b>NMS SYSTEM:</b>
a)	NMS offered shall have full features to manage, configure all the network devices/elements and monitor all the network elements & end devices.
b)	Management, Configuration and monitoring of minimum 100 network devices.
c)	Monitoring scalable to 200 devices
d)	Shall discover all IP devices and nodes attached to the network, including switches, routers, firewalls and gateways,
e)	The system shall Automatically discover network topology, network devices present on the network and shall be displayed on GUI.
f)	The system shall create network maps for Layer 3 & Layer 2 network and all the available VLANs.
g)	The system shall have the ability to configure all network element/devices configuration, parameters using a graphical interface.
h)	The system shall have multi user web-based interface.
i)	The system shall have the ability to manage network node configuration backup on a scheduled basis,
j)	The system shall schedule Device configuration back-up and restore functionality
k)	Creation and management of security and QoS policies
l)	Automatic Detection of configuration changes.
m)	Shall support 3rd party network devices.
n)	Shall have the functionality of Group provisioning / Scheduled configuration roll out management. Shall have the ability to perform scheduled or Unscheduled network wide software or Firmware upgrades Shall have the ability to create group (of devices) for applying same task.
o)	Shall have the ability bulk configure parameters across many network devices from a single interface.
p)	Shall have the ability to push custom script files to the network nodes.
q)	The system shall high level Network Inventory polling capability for IP Network nodes, all available line cards/modules, ports, Physical links, VLAN interfaces and all the other SNMP capable devices in the network.
r)	Network device monitoring at the device level to determine the health of network components and the extent to which their performance matches with the capacity/service-level.
s)	Monitor network performance such as bandwidth utilization, packet loss, latency, availability and uptime of Core Switch/router, switches and other Simple Network Management Protocol (SNMP) enabled devices connected to the network.
t)	Shall have extensive fault management capabilities with Real time Event and Alarm notifications, System Logs and keep an audit trail of configuration changes made by users.
u)	Event notification: Configurable alerts that respond to specific network scenarios/event and send notifications by sending emailing or text messages to the network administrator/designated user.
v)	Shall have the ability to customize the NMS GUI/dash board as per the requirements of the users.
w)	Shall have centralized built-in trouble shooting tools.
x)	<b>Hardware for the NMS shall have following minimum specifications</b>
i)	64-bit, Processor, Quad Core, operating at base Frequency 2.0 GHz or more with 8 MB Cache.
ii)	RAM: 32.0 GB, DDR 4, 3200 MHz, expandable up to 64 GB.

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

iii)	Hard Disk 1TB SSD and 1TB SATA
iv)	USB Port: Four Port V2.0 & V3.0, out of these at least Two shall be V3.0. Minimum 02 Nos in Front.
v)	Keyboard Mouse: Standard KB and Optical scroll mouse
vi)	Inbuilt Stereo Speakers.
vii)	Integrated NIC: Two (02) Nos of Integrated Gigabit Ethernet (10/100/1000) Card, Wake on LAN.
viii)	Monitor LED Backlit: <ul style="list-style-type: none"> <li>• Monitor, 40" or higher.</li> <li>• Aspect Ratio 16:9 (or better)</li> <li>• Max/Native Resolution: 1920 X 1080 @ 60 Hz or better</li> <li>• Contrast ratio: 700:1 or better</li> <li>• Brightness: 250 cd/m<sup>2</sup> or better</li> </ul>
ix)	Operating System: LINUX or 64-Bit Microsoft windows 10 or Latest Professional License or as per the requirements of NMS applications.
<b>11.0 Hardware for AAA Server</b>	
a)	Server Intel Xeon Based, Dual processor, 8 Core, 16 MB Cache or better.
	RAM 32 GB or higher, DDR4, 3200MHz
b)	HDD: NL-SAS or SSD drives, hot-swappable, loaded with minimum storage space of 3 TB or higher.
c)	Server shall have RAID controller supporting RAID 0, 1, 5, 6, 10, configurations.
d)	Shall be provisioned with <b>out</b> of band management for monitoring, alerting, reporting, remote power on/off, restart, configure BIOS, management etc. This shall be done using separate LAN connectivity to the administrator.
e)	SYSTEM MANAGEMENT: <ul style="list-style-type: none"> <li>• Server shall support configuring and booting securely with industry standard Unified Extensible Firmware.</li> <li>• Essential tools/drivers to setup, deploy and maintain the server shall be provisioned.</li> <li>• Systems Management software shall provide Role-based security.</li> <li>• Shall support automatic event handling that allows configuring policies to notify failures via e-mail, or SMS or automatic execution of scripts.</li> <li>• Shall support system data collection and enable users to generate reports in HTML, CSV or XML format.</li> </ul>
f)	Remote Management: <ul style="list-style-type: none"> <li>• System remote management shall support browser based graphical remote console, remote boot. It shall be capable of offering upgrade of software and patches from a remote client using Media/image/folder.</li> <li>• Server shall support agentless management using the out-of-band remote management port.</li> <li>• The server shall support monitoring and recording changes in the server hardware and system configuration.</li> <li>• Terminal Services (Microsoft), 128-bit SSL encryption and Secure Shell Version 2 support.</li> <li>• Shall provide remote firmware update functionality.</li> </ul>
g)	Server shall have Support for advanced memory redundant technologies like Advanced error-correcting code (ECC) and memory mirroring.
h)	4 Nos 1GbE LAN Ports.
i)	At least 2 USB ports,
j)	Hot swappable redundant fan.
k)	Hot swappable redundant power supplies.
l)	Rack mount with rapid rail
m)	The hardware requirements mentioned above are minimum requirements for Server. However, in order to meet the tendered requirements and functionalities of IP PBX, scalability requirements and expansions etc., the Contractor shall provide enhanced hardware/components required for servers.
n)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system. Copy of registration shall be shared with AAI.
o)	The Technical Manual shall be provided containing all /most technical details, guidelines, procedure etc. for configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc..
p)	All Licenses, User ids for technical support shall be in the name of AAI, Copy of License Registration with User Id shall be shared with AAI
<b>12.0 WORKSTATION HARDWARE</b>	
a)	64-bit, Processor, Quad Core, operating at base Frequency 2.0 GHz or more with 8 MB Cache.
b)	RAM: 16.0 GB, DDR 4, 3200 MHz, expandable up to 32 GB.
c)	Hard Disk: 1TB SSD and 1TB SATA
d)	PCI Slot: Minimum 01 Nos Free Slots
e)	Serial COM Port: At least 01 Nos (One).

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

f)	USB Port: Four Port V2.0 & V3.0, out of these at least Two shall be V3.0. Minimum 02 Nos in Front.
g)	Keyboard Mouse: Standard KB and Optical scroll mouse
i)	Inbuilt Stereo Speakers.
j)	Optical Drive: 8 X DVD +/- RW.
k)	Integrated NIC: Two (02) Nos of Integrated Gigabit Ethernet (10/100/1000) Card,
l)	Wifi 802.11AC
m)	Monitor: <ul style="list-style-type: none"> <li>• Monitor, 27" or higher.</li> <li>• Aspect Ratio 16:9 (or better)</li> <li>• Max/Native Resolution: 1920 X 1080 @ 60 Hz or better</li> <li>• Contrast ratio: 700:1 or better</li> <li>• Brightness: 250 cd/m<sup>2</sup> or better</li> <li>• Height Adjustable &amp; swivel</li> </ul>
n)	Operating System: 64 Bit Microsoft windows10 or Latest Professional License.
o)	MS Office Latest professional Licensed version
<b>13.0</b>	<b>LC-LC Type 9/125µm Single mode Duplex Tight buffered OS2 Optical Fiber Patch Cords: -</b>
a)	Length: 1 and 3 mtr, as per site requirement
b)	Connectors: The optical fiber patch leads shall comprise of Single mode 9/125µm fiber with 2 X LC type fiber connectors terminated at each end of fiber patch cord.
c)	Buffer Diameter: 900µ tight buffer.
d)	Strength Member: Aramid Yarn
e)	Connector Loss: 0.30dB(max)
f)	Pull-out force: ≥ 100 N (per connector)
g)	Jacket Material: LSZH or better as per IEC 60332-1-2, IEC 60332-3-24, IEC 60754-1, IEC 60754-2, IEC 61034-2
h)	Operating Temperature: 0°C to 60°C
<b>14.0</b>	<b>CAT 6 A RJ45 Connector for CAT U/FTP cable</b>
a)	CAT 6A RJ45 jack module suitable for 1GBase-T applications, complying with relevant TIA/EIA standards, IEEE 802.3an up to 500 MHz and 100 m distance.
b)	CAT 6A RJ45 jack module shall be compliant with CAT 6A U/FTP standard & POE+ standard.
c)	CAT 6A RJ45 jack shall accommodate 22 to 24 AWG solid copper wire.
d)	CAT 6A RJ45 jack shall have Contact Plating of 50µ" Gold/100µ" Nickel.
e)	CAT 6A RJ45 jack shall have contact material of copper alloy
f)	CAT 6A RJ45 jack shall fit into faceplates, surface-mount boxes, consolidation point boxes, and Modular Panels
g)	CAT 6A RJ45 jack shall be mountable either at 90 degrees (straight) or 45 degrees (angled) in any faceplate.
h)	CAT 6A RJ45 jack shall be certified by independent labs like ETL or equivalent.
i)	CAT 6A RJ45 jack shall be RoHS Compliant
<b>15.0</b>	<b>Fully loaded 24 port Category- 6A U/FTP Modular Patch Panel</b>
a)	Patch panel shall be 19" rack mountable, of height 1U, constructed of cold-rolled steel.
b)	Compliant with CAT 6A U/FTP standard, IEEE 802.3an for 1G BASE-T & POE+ Standard
c)	Shall have cable retention and cable management
d)	Shall have both front & rear labelling options
e)	Patch panel shall have 24 ports loaded with RJ45 jacks in straight fashion meeting specifications of CAT 6A RJ45 jack for CAT 6A U/FTP cable given in tender
f)	Patch panel shall have icons on each of 24-ports
g)	Shall be possible to work on an individual cable/jack without disturbing other cables/connectors/jacks
h)	Patch panel shall be ROHS Compliant
<b>16.0</b>	<b>Cat 6A U/FTP LSZH Patch Cord,</b>
a)	Patch Cord Length shall be 3m / 5m (as per site requirement)
b)	All components/material used in the Patch cord shall be POE+ compliant.
c)	Patch cord shall conform to Category 6A U/FTP standards/requirements
d)	Support network line speeds up to 1 Gbps.
e)	POE+ compliant RJ-45 plugs suitable for CAT 6A U/FTP cable of stranded copper at both the ends
f)	Outer jacket shall be of LSZH
g)	Patch cord shall be RoHS Compliant
<b>17.0</b>	<b>CAT 6A RJ45 Connector for CAT 6A TP cable:</b>
a)	CAT 6A RJ45 jack module suitable for 1 G Base-T applications, complying with relevant TIA/EIA standards, IEEE 802.3an.
b)	CAT 6A RJ45 connector shall be compliant with CAT 6A FTP standard & POE+ standard.
c)	CAT 6A RJ45 connector shall accommodate 22 to 24 AWG solid copper wire.
d)	CAT 6A RJ45 connector shall have Contact Plating of 50µ" Gold/100µ" Nickel.
e)	CAT 6A RJ45 connector shall have contact material of copper alloy
f)	CAT 6A RJ45 connector shall be RoHS Compliant

### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

<b>18.0</b>	<b>Single RJ 45 Port CAT 6A U/FTP Fully loaded gang wall plate with surface mount back box</b>
a)	Loaded box shall have RJ45 jack module, single port.
b)	Loaded box shall have suitable surface mount back box along with fittings (screws, holes etc.) and other accessories for mounting on wall
c)	Complete assembly shall be Suitable for 1Gbase-T applications in acc. With IEEE 802.3an up to 500 MHz and 100 m.
d)	Loaded box Shall be fitted with one Category 6A, RJ45 jacks' module in angular fashion meeting specifications of CAT 6A RJ45 jack for CAT 6A U/FTP cable in this tender
<b>19.0</b>	<b>Equipment Rack 42 RU</b>
a)	Rack shall be of 42RU height (straight longitudinal) only, width (straight latitudinal) shall be of 800 ±10 mm and its depth shall be of 1000 ± 10 mm only and shall be constructed using minimum 18 Gauge Mild Steel Sheets painted with corrosion resistant paint then powder coated with textured polyester (Mat finished).
b)	Rack Front shall have glass door with 3-point lock system, approximately 70% transparent, clear brown toughened single piece of glass.
c)	Rack Front and Rear doors shall be on Hinges & shall open completely
d)	Rack Rear doors shall be perforated up to 50 % only
e)	Rack Sides Panel shall have no more than 10% perforations with latch lock arrangement and shall be removable by user as per requirements
f)	Rack shall have 04 Nos 4" Blower/FAN of 1ph 230 V AC installed on top of rack for air to be expelled out and Blower/FAN power on/off control.
g)	Rack shall have Vertical Cable Manager on both sides.
h)	Minimum 06 Shelves, complete with installation material.
i)	RoHS compliance
j)	Vertical Power Distribution Unit having 5/15 A (as per site requirements) with fuse, power indicator
<b>20.0</b>	<b>Equipment Rack 9 RU</b>
a)	Rack shall be wall mount, 9 RU height (straight longitudinal) only, 19" width (straight latitudinal) X 600 or more width, depth of 600 mm or more, minimum 18 Gauge Mild Steel Sheets painted with corrosion resistant paint, powder coated with textured polyester (Mat finished).
b)	Rack Front shall have glass door with 3-point lock system, approximately 70% transparent, toughened single piece of glass.
c)	Rack Front doors shall be on Hinges & shall open completely.
d)	Rack Sides Panel shall have no more than 10% perforations with latch lock arrangement and shall be removable by user as per requirements.
e)	Rack shall be with appropriate size/capacity cable manager on both sides.
<b>21.0</b>	<b>Installation Accessories:</b>
a)	<b>Tools:</b> Network Tool Kit containing LAN Cable Tester, data Cable Crimping Tool for RJ45, RJ 11, Cable Cutter and Stripper, of reputed make shall be provided. A portable Industrial Handheld Label printer shall provide with the installation meeting minimum requirement of Tape Technology: Laminating Thermal Transfer, Tape type :Standard adhesive, extra strength adhesive, flexible ID Tape , Heat shrink Tube , Temper evident , Tape size from 6mm to 24mm with print height of 18mm (minimum), resolution of 180Dpi, fully automatic tape cutter, USB PC interface with Windows 8/7 support, QWERTY keyboard LCD Display, software Features such as Label Design, cable 44 labeling etc. user configurable Font of 9 pt. to 48 pt. with Built In Industrial Symbols, Long Life Lithium-Ion rechargeable Batteries, protective Carrying Case, AC Adaptor.
b)	<b>Installation materials:</b> All installation materials as per the requirement of sites such as mounting poles, flexible conduit, cable management system, Nut, bolt, Cable ties (shall be weather proof UV Stabilized Nylon 6.6 cable ties for outdoor use in continuous or extended exposure to sunlight), 10 ft Aluminum Ladder (01 Nos, adjustable from 5 to 10 ft) etc. shall be supplied. All cable and connector shall be Labeled at every entry/exit/termination/MDF etc.,
<b>22.0</b>	Above are minimum specifications of the systems/components/devices. However, higher or better specifications or any additional modules / cards / components/devices /functionalities if any needed for the system, then the same shall be provisioned & integrated.

## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

### **ESTIMATED BILL OF MATERIALS– S.I.T.C. OF NTP SERVER AND GPS CLOCK**

<b>A.0</b>	<b>ACTIVE NETWORK</b>	<b>QTY</b>	<b>UNIT</b>	<b>OFFERED MAKE &amp; MODEL</b>
1	CORE SWITCHES WITH ACCESSORIES	2	LOT	
2	DISTRIBUTION/ACCESS SWITCHES WITH ACCESSORIES	12	LOT	
3	NAC/AAA SERVER WITH ACCESSORIES	1	LOT	
4	NMS WITH ACCESSORIES	1	LOT	
5	FIREWALL WITH ACCESSORIES	1	LOT	
6	NTP SERVER WITH ACCESSORIES	2	LOT	
7	NTP CLOCK 100MM WITH ACCESSORIES	32	LOT	
8	SERVER HARDWARE WITH ACCESSORIES	1	LOT	
9	WORK STATION WITH ACCESSORIES (For Maintenance Engineers to access all connected network devices/servers)	1	LOT	
10	ADMINISTRATIVE LAPTOP WITH ACCESSORIES	1	LOT	
11	8 PORT KVM SWITCH WITH 15" MONITOR, KB AND TRACK BALL WITH ALL ACCESSORIES	2	LOT	
<b>B.0</b>	<b>PASSIVE COMPONENTS/ITEMS</b>			
12	LC-LC TYPE 50/125μM OM4 MULTI-MODE FIBRE PATCH CORDS: -	64	NOS	
13	24 PORT CAT – 6A U/FTP MODULAR PATCH PANEL, FULLY LOADED WITH ACCESSORIES	16	LOT	
14	CAT 6A U/FTP LSZH PATCH CORD, 5 MTR	200	NOS	
15	<b>CAT 6A CABLE, U/FTP, 4P, LSZH, 500 MHZ BOX 500 MTR</b>	10	ROLLS	
16	CAT 6 RJ45 CONNECTOR FOR CAT U/UTP CABLE	100	NOS	
17	SINGLE RJ 45 PORT CAT 6A U/FTP FULLY LOADED GANG WALL PLATE WITH SURFACE MOUNT BACK BOX	50	LOT	
18	SPD FOR RJ 45	50	NOS	
19	19" RACK 42 RU 800X1000MM	2	LOT	
20	19" RACK 9 RU WALL MOUNT RACK	5	LOT	
21	INSTALLATION ACCESSORIES: NETWORK TOOL KIT CONTAINING LAN CABLE TESTER, DATA CABLE CRIMPING TOOL FOR RJ45, RJ 11, CABLE CUTTER & STRIPPER, LABEL PRINTER AND INSTALLATION ACCESSORIES ETC:	1	LOT	
22	INSTALLATION MATERIAL	1	LOT	
23	Cost of 1 <sup>st</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 03 calendar years OOPMW after successful SAT	1	LOT	
24	Cost of 2 <sup>nd</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 1 <sup>st</sup> year CAMC	1	LOT	
25	Cost of 3 <sup>rd</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 2 <sup>nd</sup> year CAMC	1	LOT	

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

26	Cost of 4 <sup>th</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 3 <sup>rd</sup> year CAMC	1	LOT	
27	Cost of 5 <sup>th</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 4 <sup>th</sup> year CAMC	1	LOT	

**10.0 Warranty/Guarantee:**

Minimum 36 Months warranty /guarantee shall be provided on the entire project and the actual warranty/guarantee period will start from the date of commissioning.

**11.0 Lowest bidder (L1) shall be finalized on the basis of basic cost to AAI.**

Price Bid of the bidder shall be considered on the basis of lowest net cost.

Price bid shall be full in all respect. Partial bid will not be considered for financial evaluation.

**12.0 Time Schedule:**

The supply/work as per the Notice Inviting Tender shall be completed within **10 weeks from the date of issuance of work order / Purchase order**. The Items shall be supplied on door delivery basis to sites as per address mentioned in **Annexure – VIII**.

**13.0 Payment terms:**

As per clause 20 of Section-III



**PROFORMA FOR EMD – BANK GUARANTEE**

*(On Non-judicial stamp paper of Rs.100.00)*

AIRPORTS AUTHORITY OF INDIA

Integrated Operational Offices Building, New Airport Colony,  
Opposite Parsiwada, Sahar Road  
Vile Parle East, Mumbai 400 099.

Dear Sir,

WHEREAS, Bidder..... (Name of Bidder) (Hereinafter called 'the Bidder') has submitted his tender dated..... (date) for the" .....

" (Hereinafter called "the Tender)

KNOW ALL PEOPLE by these Presents that we..... (Name of bank) having our ..... registered office at..... (Hereinafter called "the bank") are bound unto ..... (Name of Senior Manager) (Hereinafter Called "the Engineer -In-Charge") in sum of Rs.....(Rs. In Words ..... ) for which payment well and truly to be made to the said Engineer -In-Charge the Bank binds itself, 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 after tender opening the Bidder withdraws, his tender during the period of validity of tender (including extended validity of tender) specified in the Form of Tender;
- (2) If the Bidder having been notified of the acceptance of his tender by the Engineer-In-charge:
  - (a) Fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidder, if required; **OR**
  - (b) Fails or refuses to furnish the Performance Guarantee, in accordance with the provisions of tender document and instructions to Bidder, **OR**
  - (c) Fails or refuses to start the work, in accordance with the provisions of the contract and instructions to Bidder, **OR**
  - (d) Fails or refuses to submit fresh Bank Guarantee of an equal amount of this bank Guarantee, against Security Deposit after award of contract.

We undertake to pay to the Engineer-In-charge up to the above amount upon receipt of his first written demand, without the Engineer-In-charge having to substantiate his demand, provided that in his demand



**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

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the Engineer-in-Charge will note that the amount claimed by his is due to him owing to the occurrence of one or any of the above conditions, specifying the occurred condition or conditions,

This Guarantee will remain in force up to and including the date... .....after the deadline for submission of tender as such deadline is stated in the instructions to Bidder or as it may be extended by the Engineer-in-Charge, 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.....

WITNESS.....

(SIGNATURE, NAME AND ADDRESS)

SIGNATURE OF THE BANK

SEAL

**PROFORMA FOR EMD - BANK GUARANTEE (Contd....)**

**(Letter of understanding from the Depositor to Bank to be submitted along with EMD to Airports**

**Authority of India)**

**The Branch Manager,**

.....Bank,

.....,

**Sub: - My/Our Bank Guarantee bearing no. .... dated for..... amount..... issued in favour of Airports**

**Authority of India**

Sir,

The subject Bank Guarantee is obtained from your branch for the purpose of Earnest Money on account of contract awarded/ to be awarded by M/s AAI to me/us.

I hereby authorize the Airports Authority of India in whose favor the deposit is made to close the subject Bank Guarantee before maturity/on maturity towards adjustment of dues without any reference/consent/notice from me our side and the bank is fully discharged by making the payment to Airports Authority of India

Signature of the Depositor

Place :

Date :

**Annexure-II****Company/Firm details.**

(To be uploaded in Technical bid folder)

<b>SN</b>	<b>Details</b>	<b>To be furnished by the vendor</b>
01.	Name & Address of the firm	
02.	Pre-Contract Integrity Pact. *	
03.	PAN No.*	
04.	GST Registration No.	
05.	Type of organization & year of incorporation. *	
07.	Correspondence address with contact person's name, telephone number, mobile number etc.	
08.	Turnover of the company. Please provide audited Balance Sheets for last 3 years. *	
09.	<b>Details of experience certificates till 31.03.2022</b>	
10.	Whether Annexure-II filled up with all details	Yes / No

*\* Relevant documents duly self-certified should be attached as Proof.***Signature of the authorized person with****Company seal**

**LIST OF WORKS EXECUTED DURING LAST 7 YEARS TOWARDS S.I.T.C. OF NTP SERVER AND GPS CLOCK**

<b>Name of the Firm/Client</b>	<b>Location of the work</b>	<b>Work order Details up to 31.01.2022</b>	<b>Amount (Rs)</b>	<b>Remarks</b>

**\* Relevant documents duly self-certified should be attached as Proof (Attach proof like, copy of work order, performance & completion certificate etc.)**

**Signature of the authorized person with Company seal**

**UNCONDITIONAL ACCEPTANCE LETTER**

**(On company letter head)**

(To be uploaded along with Technical bid document)

To  
General Manager (CNS) WR,  
Airports Authority of India,  
Integrated Operational Offices Building, New Airport Colony,  
Opposite Parsiwada, Sahar Road  
Vile Parle (East) Mumbai - 400 099.

**Sub: UNCONDITIONAL ACCEPTANCE OF AAI'S TERMS & CONDITIONS OF TENDER.**

**Tender Document No.:** AAI/CNS-WR/NTP System/Mopa/2022

**Name of Work:** *S.I.T.C. of NTP Server and GPS Clock at Mopa Airport*

Dear Sir,

1. The tender document for the works mentioned above have been provided to me/us by Airports Authority of India and I/we hereby certify that I/we have read the entire terms and conditions of the tender documents made available to me/us, which shall form part of the contract agreement and I/we shall abide by the conditions/Clauses contained therein.
2. I/We hereby unconditionally accept the tender conditions of AAI's tender documents in its entirety for the above works.
3. It is clarified that after unconditionally accepting the tender conditions in its entirety, it is not permissible to put any remarks/conditions (except unconditional rebates on quoted rates if any) in the tender enclosed the same has been followed in the present case. In case any provisions of this tender are found to be violated after opening Technical & Price bids, I/we agree that the tender shall be rejected and AAI shall without prejudice to any other right or remedy be at liberty to forfeit the full said earnest money absolutely.
4. I/we declare that I/we have not paid and will not pay any bribe to any officer of AAI for awarding this contract at any stage during its execution or at the time of payment of bills and further if any officer of AAI asks for bribe/gratification, I/we will immediately report it to the appropriate authority in AAI.
5. It is declared that our company/partners or its Directors have not been black listed or any case is pending or any complaint regarding irregularities is pending, in India or any Indian State/Central Governments Departments or Public Sector Undertaking of India.

Yours faithfully

Date:

(Signature of the bidder with rubber stamp)

**PROFORMA FOR e-PAYMENT**

To  
General Manager (CNS) -WR,  
Airports Authority of India,  
Integrated Operational Offices Building, New Airport Colony,  
Opposite Parsiwada, Sahar Road  
Vile Parle (East) Mumbai - 400 099.

**Subject: Request for E-Payment.**

Sir,

Following particulars are given for effecting E-payment in respect of our claim / Bill.

1	Name of Company	
2	Company Address	
3	Telephone No.	
4	Fax no	
5	Mobile No.	
6	Email-Id	
7	PAN Number of the	
8	GST No.	
9	Company Bank A/c	
10	IFSC CODE	
11	Name of Bank / Branch	
12	Branch Code	
13	Bank Address	

Thankingyou,

Yours Faithfully

Signature of the authorized person with Company seal

**Note: Any erroneous information may lead to harmful transaction for which either AAI or the Bank will not be liable/ responsible.**

**PROFORMA PERFORMANCE BANK GUARANTEE**

(To be stamped in accordance with stamp Act) (The non-judicial stamp paper should be in the name of issuing Bank)

Ref: -

Bank Guarantee No: -

Date.....

To

AIRPORTS AUTHORITY OF INDIA  
Integrated Operational Offices Building, New Airport Colony,  
Opposite Parsiwada, Sahar Road  
Vile Parle (East) Mumbai - 400 099.

In consideration of the Chairman, Airports Authority of India [hereinafter called "AAI"] having offered to accept the terms and conditions of the proposed agreement between..... and ..... [here-in-after called "the said Contractor(s)"] for the works ..... [here-in-after called "the said agreement"] vide Order no. .... Dated ....., having agreed to production of irrevocable Bank Guarantee for Rs..... (Rupees.....only) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We..... (Indicate the name of the Bank) [herein after referred to as "the Bank"] hereby undertake to pay to the Chairman, AAI an amount not exceeding Rs..... (Rupees ..... only) on demand by AAI.
2. We..... (indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this Guarantee without any demure, merely on a demand from AAI stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs..... (Rupees only).
3. We, the said bank further undertakes to pay to the Chairman, AAI any money so demanded notwithstanding any dispute or disputes raised by the contractor (s) in any suit or proceeding pending before any court or tribunal relating thereto, our liability under this present being absolute and unequivocal.
4. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the contractor(s) shall have no claim against us for making such payment. We... (indicate the name of the bank) further agree that the guarantee here in contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of AAI under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Project-In-charge on behalf of AAI certified that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s) and accordingly discharges this guarantee.
5. We.....(indicate the name of the bank)further agree with AAI that AAI shall have the fullest liberty without our consent and without effecting in any manner our obligations hereunder to vary any of terms and conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by AAI against the said contractor(s) and to for bear or enforce any of the terms and conditions relating to the said agreement and we shall not be relived from our liability by reason of any such variation, or extension being

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**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

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granted to the said contractor(s) or for any forbearance, act or omission on the part of AAI or any indulgence by the AAI to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect so relieving us.

This guarantee shall not be discharged due to the change in the constitution of the Bank or the contractor(s).

We.....(indicate the name of the bank) lastly undertake not to revoke this guarantee except with the previous consent of AAI in writing.

This guarantee shall be valid up to.....unless extended on demand by AAI. Not with standing anything mentioned above, our liability against this guarantee is restricted to Rs ..... (Rupees .....only) and unless acclaim in writing is lodged with us within six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated the ..... (Day) of..... (Month)..... (Year)

For.....(Indicate the name of bank).

**APPLICATION FOR EXTENSION OF TIME****Part-I**

1. Name of the Contractor
2. Name of the work as given in the agreement
3. Agreement No.
4. Contract Amount
5. Date of Commencement of work as per agreement
6. Period allowed for completion of work as per agreement
7. Date of completion stipulated in agreement
8. Date of actual completion of work
9. Period for which extension is applied for.
10. Hindrances on account of which extension is applied for with dates on which hindrances occurred and the period for which these are likely to last.

SN	Name of Hindrance	Date of occurrence of hindrance	Date of over of hindrance	Period of hindrance	Overlapping Period	Net extension applied for	Remarks if any
1	2	3	4	5	6	7	8

Total period for which extension is now applied for on account of hindrances mentioned above.

Month \_\_\_\_\_ Days \_\_\_\_\_

11. Extension of time required for extra work.

12. Details of extra work and the amount involved: -

Total value of extra work	Proportionate period of extension of time based on estimated amount put to tender on account of extra work.
(a)	(b)

13. Total extension of time required for 10 & 11.

Submitted to the Project Leader \_\_\_\_\_.

Signature of Contractor Dated \_\_\_\_\_



**Part II**

(For Official Use)

1. Date of receipt of application from \_\_\_\_\_  
for the work of \_\_\_\_\_ in the O/o the General Manager (CNS)WR, AAI, Mumbai Airport.
2. Recommendations of the project Leader as to whether the reasons given by the contractor are correct and what extension, if any, is recommended by him. If he does not recommend the extension, reasons for rejection should be given.

Dated:

Signature of the Installation In- charge  
(To be filled in by the Project Leader)

1. Date of receipt in the Office: -
2. Project Leader's remarks regarding hindrances mentioned by the contractor.
  - (i) Serial No
  - (ii) Nature of hindrance
  - (iii) Date of occurrence of hindrance
  - (iv) Period for which hindrance is likely to last
  - (v) Extension of time applied for by the contractor
  - (vi) Overlapping period, if any, giving reference to items which overlap
  - (vii) Net period for which extension is recommended
  - (viii) Remarks as to why the hindrance occurred and justification for extension recommended.
3. Project Leader's Recommendations.
  - a. Progress of the work as on date \_\_\_\_\_
  - b. The proposed date of completion \_\_\_\_\_
  - c. Date up to which extension of time is sought for \_\_\_\_\_
  - d. Reasons for extension of time
  - e. Proposed compensation to be levied under clause 10 of section III of the tender document.

Signature of Project Leader

Signature of Accepting Authority

**BILL OF MATERIALS & PORT CONSIGNEE****List of Deliverables****Name of Work: S.I.T.C. of NTP Server and GPS Clock at Mopa Airport****Tender Document No.: AAI/CNS-WR/NTP System/Mopa/2022****A). Bill of Materials:**

S. No.	Item description-As per the technical specifications	Quantity	Offered Make and Model
<b>A.0</b>	<b>ACTIVE NETWORK</b>		
1.	CORE SWITCHES WITH ACCESSORIES	2 LOT	
2.	DISTRIBUTION/ACCESS SWITCHES WITH ACCESSORIES	12 LOT	
3.	NAC/AAA SERVER WITH ACCESSORIES	1 LOT	
4.	NMS WITH ACCESSORIES	1 LOT	
5.	FIREWALL WITH ACCESSORIES	1 LOT	
6.	NTP SERVER WITH ACCESSORIES	2 LOT	
7.	NTP CLOCK 100MM WITH ACCESSORIES	32 LOT	
8.	SERVER HARDWARE WITH ACCESSORIES	1 LOT	
9.	WORK STATION WITH ACCESSORIES	1 LOT	
10.	ADMINISTRATIVE LAPTOP WITH ACCESSORIES	1 LOT	
11.	8 PORT KVM SWITCH WITH 15" MONITOR, KB AND TRACK BALL WITH ALL ACCESSORIES	2 LOT	
<b>B.0</b>	<b>PASSIVE COMPONENTS/ITEMS</b>		
12.	LC-LC TYPE 50/125µM OM4 MULTI-MODE FIBRE PATCH CORDS: -	64 NOS	
13.	24 PORT CAT – 6A U/FTP MODULAR PATCH PANEL, FULLY LOADED WITH ACCESSORIES	16 LOT	
14.	CAT 6A U/FTP LSZH PATCH CORD, 5 MTR	200 NOS	
15.	<b>CAT 6A CABLE, U/FTP, 4P, LSZH, 500 MHZ BOX 500MTR</b>	10 ROLLS	
16.	CAT 6 RJ45 CONNECTOR FOR CAT U/UTP CABLE	100 NOS	
17.	SINGLE RJ 45 PORT CAT 6A U/FTP FULLY LOADED GANG WALL PLATE WITH SURFACE MOUNT BACK BOX	50 LOT	
18.	SPD FOR RJ 45	50 NOS	
19.	19" RACK 42 RU 800X1000MM	2 LOT	
20.	19" RACK 9 RU WALL MOUNT RACK	5 LOT	
21.	INSTALLATION ACCESSORIES: NETWORK TOOL KIT CONTAINING LAN CABLE TESTER, DATA CABLE CRIMPING TOOL FOR RJ45, RJ11, CABLE CUTTER & STRIPPER, LABEL	1 LOT	

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

	PRINTER AND INSTALLATION ACCESSORIES ETC:		
22.	INSTALLATION MATERIAL	1 LOT	
23.	Cost of 1 <sup>st</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 03 calendar years OOPMW after successful SAT.	1 LOT	
24.	Cost of 2 <sup>nd</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 03 calendar years OOPMW after successful SAT.	1 LOT	
25.	Cost of 3 <sup>rd</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 03 calendar years OOPMW after successful SAT.	1 LOT	
26.	Cost of 4 <sup>th</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 03 calendar years OOPMW after successful SAT.	1 LOT	
27.	Cost of 5 <sup>th</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 03 calendar years OOPMW after successful SAT.	1 LOT	

**Note: Bidder shall submit the OEM Certificate or Valid Authorization Letter from OEM for NTP server. Only one Make & Model is to be mentioned for offered product.**

**B). Consignee Address:**

**Airports Authority of India,  
C/o, Chief Development Officer,  
GMR GOA International Airport,  
Mopa Airport Project Site,  
Via Dadachiwadi road - Nagzar,  
Pernem Taluka,  
Goa-403512**

**Proforma Agreement with Successful Bidder**

**AGREEMENT** (on Rs.100/- Non-Judicial Stamp Paper)

**Service Level Agreement for S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

**Between**

**Airports Authority of India, RHQ-WR, Mumbai-99, Maharashtra**

**And**

**(Name of the Contractor along with address)**

**THIS AGREEMENT**, entered into this (Date) day of (Month & Year) by and between (Name of Contractor), having its office at (Contractor's Office Address) (hereinafter called the "Contractor") and the Airports Authority of India having its office at Rajiv Gandhi Bhavan, Safdarjung Airport, New Delhi India (hereinafter called the "AAI"), the expressions "Contractor" and "AAI" shall mean their successors, legal representatives or assigns, for the "**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**" at Airports Authority of India, RHQ-WR, Mumbai-99, Maharashtra.

**WITNESSETH**

**WHEREAS**, AAI invited offers for the "**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**" at Airports Authority of India, RHQ-WR, Mumbai-99, Maharashtra.

Whereas, the Contractor has offered to undertake "**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport.**" in accordance with their Price Bid dated (Date) and AAI has accepted its offer.

**Now**, therefore, in consideration and mutual covenants contained herein, the Contractor and the AAI (hereinafter referred to as the "parties") agree that the following document shall be part of this agreement: -

AAI E-tender Documents for the "**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**"

1. Tender corrigendum no. 1, 2 ..... , if any.
2. Bid Documents submitted by the Contractor dated (Date) in fulfilling the contract requirements that includes the signed compliance.

3. Unconditional acceptance of AAI Tender conditions as given by the Contractor.
4. Queries raised by AAI during technical evaluation and technical clarification submitted by contractor in response thereof. \_\_\_\_\_
5. The price bid of the Contractor which was opened on (Date) and accepted by AAI.  
\_\_\_\_\_
6. Reference of LOI/Work order issued/acceptance of bidder. \_\_\_\_\_  
\_\_\_\_\_

For and on behalf of Contractor

For and on behalf of Chairman, AAI.

Signature:

Signature:

Name:

Name:

Designation:

Designation:

1. Witness: (Signature, Date, Name, Designation on behalf of AAI)
2. Witness: (Signature, Date, Name, Designation on behalf of Bidder / Firm)

**FORMAT FOR INTIMATION OF FORCE MAJEURE OCCURRENCE**

To,

Airports Authority of India,  
Integrated Operational Offices Building, New Airport Colony,  
Opposite Parsiwada, Sahar Road  
Vile Parle (East) Mumbai - 400 099.

**Name of Work: S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

Tender Reference No.: AAI/CNS-WR/NTP System/Mopa/2022-23

Subject: Intimation regarding Force Majeure Case.

Sir,

Pursuant to Section-III, Clause No.17 - FORCE MAJEURE, it is for your kind	Detail of Incident	Activity affected	Likely Delay	Requested Extension

We are entitled to an extension in the date of completion as requested above. Bar Chart with revised schedule of activities is attached. Please approve the extension in the time. Evidence of the date of occurrence is also enclosed.

It is certified that performance of the Contract has been interfered with. It is also certified that the incident has not occurred due to our own action and that there has not been any lack of action by us in preventing the occurrence.

We are only claiming the extension in the date of completion of the activity (ies) and not claiming the loss incurred in the course of the incident.

Yours truly, (Project Leader)

Enclosures:

1. Revised Bar Chart.
2. Evidence of the occurrence of the Force Majeure case (.... sheets)

**Technical Compliance****Technical and operational requirements Compliance Statement.****(To be submitted in Envelope –I)****Name of Work: S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

- 1 For stating Compliance: Write “C” in the Compliance column below.
- 2 For stating Non-Compliance: Write “NC” in the Compliance column below.
- 3 For stating Partial or Conditional Compliance: Write “PC” in the Compliance column below:

**Technical Specifications-****MINIMUM SPECIFICATIONS AND QUALITATIVE REQUIREMENT FOR S.I.T.C. OF NTP SERVER AND GPS CLOCK**

<b>S. No.</b>	<b>DESCRIPTION</b>	<b>Compliance C/NC/PC</b>
<b>B.0</b>	<b>SITC OF NETWORK ACTIVE COMPONENTS/DEVICES AND ASSOCIATED ACCESSORIES.</b>	
<b>1.0</b>	<b>Introduction</b>	
1.1	<p>Airport Authority of India intends to create Local Area Network Infrastructure at its ATS Complex comprising of distributed buildings. These infrastructures will provide IP connectivity for various services sharing physical network while maintaining desired isolation. The services/applications networks shall be for IP Telephony &amp; Voice network, Video/CCTV streams and Data network.</p> <p>The proposed networks shall be optimized for the present services and shall be upgradable to meet the future needs of the organization.</p> <p>The proposed networks shall be capable of providing virtualized services to IP unicast and multicast applications. The networks must be highly dependable, resilient and provide desired recovery/convergence in the event of any switch/router, node or link failure.</p>	
<b>2.0</b>	<b>General Requirements:</b>	
2.1	<b>High Availability:</b> The network being deployed shall support fault tolerant, resilient, fast converging networking and these shall be kept in all aspects of Design, selection of networking devices and implementation & operation. LAN switches must incorporate latest LAN technologies.	
2.2	<b>Resiliency and Convergence:</b> The network must be designed, implemented, configured with technologies/hardware/Software/ interfaces /protocols to recover/re-converge in less than 50 milliseconds from failure of a link/switch/network components. Converged backbone Network Infrastructure shall be the building block to achieve full resiliency and sub-50 millisecond failover for any part of the network.	
2.3 (a)	<b>Open Standards:</b> The LAN design shall deploy open Standards/protocols and use IEEE or IETF certified protocols to allow interoperability with other network devices supporting the same standards. However, to achieve resiliency as defined in this document, if require use of protocol which may be specific to an OEM may be used. The details of such protocol and their limitation/restrictions with respect to interfacing with other make hardware/network components must be specified and the Contractor/OEM shall undertake to support in integrating with other systems during life of the product.	
2.3 (b)	Protocols/Standards mentioned for network Switches are to meet intended functionalities /features/requirements of the system.	
2.4	<b>Reliability and Maturity of Product/Technology:</b> The offered system/equipment/devices/appliances/software/technology shall have a design life of	

## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

	8 years.	
2.5	<b>Scalability:</b> The networks design/offered shall be scalable to allow smooth future growth. Scalability shall also provide the support for future applications, bandwidth requirements, users, technologies, etc without the need for major restructuring/upgrades.	
2.6	<b>Security:</b> Network shall be capable of segregating users / tenants and services in isolated zones over the same physical network. Devices/components shall have capability of protecting network from IP hacking, intrusion, server/client application attack etc.	
2.7	<b>Architecture:</b> The network shall be designed to deliver next generation architecture and resiliency and shall support virtualization of Layer 2 & Layer 3 based services.	
2.8	<b>Multicast Enabled:</b> Multicast will be a key component of many of the services running on the network. The solution shall support multiple virtual IP multicast routed domains with complete traffic separation between them.	
2.9	<b>High Performance:</b> The Network shall be able to support latency sensitive applications by using low latency switches. In addition, the proposed network needs to be fully active-active load sharing.	
<b>2.10</b>	In Service Software upgrade: All Network devices shall have In Service Software upgrade and graceful restart.	
2.11	<b>Manageability:</b> The offered solution shall provide a method of Centralized control /management of Switches through Console Interface/ Web Interface. All the Switches shall support single point of management, configuration roll out and troubleshooting with Instant Access or equivalent technology. All management features shall be integrated in all the switches (the backbone or the edge /access switch). Configuration and management of the network device shall be easy & simple.	
<b>2.12</b>	Switch and Optical Fibre Transceivers shall be of the same make.	
2.13	License: Licenses applicable for the offered Hardware, Software for any of the explicit/implicit requirement mentioned in the document shall be provided for the life time of the Equipment/system by the Contractor and shall be issued and registered in the name of AAI.	
<b>2.14</b>	<b>Installation Standards:</b>	
a)	Network Cabling / wiring shall be structured and this interconnect network shall be certified for all the sub components used to build the network.	
b)	The contractor shall submit Layout drawings for the complete project, SLDs, cable/OFC route drawings, various plans associated with the implementation of the project.	
c)	The contractor before commissioning shall hand over site specific data, configured parameter of each active components/servers/devices/nodes, Routing schemes, Configured VLANs, Configured VPNs and all other associated database/ documents/files, backup files, recovery media etc. to AAI.	
d)	To ensure high availability and high reliability, the offered equipment designed/deployed by the Contractor and its OEM partner shall employ the most suitable engineering techniques, materials and dependable components, field proven design and rigorous inspection during manufacturing, employ best practices/ standard during installation & testing.	
e)	All cable incoming/outgoing, connectors from any Rack/device shall be appropriately numbered, marked and tagged for easy identification.	
<b>2.15</b>	<b>Software Support:</b>	
a)	The Contractor and OEM shall provide life time support for the offered software/applications for upgrades major or minor, software patches, extensions, drivers, security patches etc. without any additional cost to AAI.	
<b>2.16</b>	<b>Warranty: OOPMW 36 Calendar Months and 60 Calendar Months OOPCAM shall hardware warranty, software warranty and shall include:</b>	
a)	OOPMW and OOPCAMC are inclusive of all spares, consumables and other accessories, the Contractor shall offer 365x7x24Hrs basis onsite service and maintenance / replacement/ spare support. The complaint shall be lodged by AAI through all types of Toll-free Assistance i.e. by a telephone/mobile number/Email/Fax. Service engineer/representative of the Contractor firm shall attend and resolve the AAI raised complaint/issues within 48 hours of lodging of a complaint regarding degradation /malfunctioning /non-intended operations/ non-optimum performance of an Equipment/subsystem/ system/components etc.	
	Contractor shall ensure to provide L2 & L3 support from the respective OEM for every ticket logged by the User during OOPWM and OOPCAM	
<b>3.0</b>	<b>CORE SWITCH</b>	
3.1	<b>Port Density and Architecture</b>	
a)	High availability configurable.	



## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

b)	All field replaceable modules shall be hot swappable (PSUs / fans) from day 1.	
c)	Each core switch shall configure with complete redundancy in key components including Power Supplies, fans.	
d)	Switch shall be configured to provide Wire-Speed Non-Blocking Switching and Routing Performance at Layer 2 and Layer 3 on all ports.	
e)	The switch shall have <b>508 Gbps</b> or more Switching Fabric with <b>380 Mpps</b> or more forwarding rate	
f)	The switch shall have <b>minimum 24 Fibre Ports</b> supporting <b>1GE and 10 GE SFP+</b> SM fibre Transceiver. Switch shall be fully loaded with 10GE SM Fibre transceivers.	
g)	<b>The switch shall also have minimum 12 Ethernet port (RJ45) each supporting 1 GE</b>	
h)	Switch and Transceivers shall be of same make.	
i)	Shall have In Service software upgrade and graceful restart.	
j)	Core switch shall be connected using 10GE or higher SFP+ ports. Transceiver and other accessories required for this shall be supplied, installed, tested and commissioned by the contractor to bring the Core switches in Active – Active mode.	
<b>3.2</b>	<b>PERFORMANCE</b>	
a)	Extensive wire-speed traffic classification for ACLs and QoS.	
b)	9KB Jumbo frame size	
c)	Wire-speed multicasting	
d)	32K or higher MAC addresses	
e)	Minimum 4096 VLANs and VLAN Ids 4 K	
f)	Minimum 4 K multicast routes and 16 K unicast routes IPv4	
g)	Minimum 4 K multicast routes and 8 K unicast routes IPv6	
h)	The Core Switch shall provision full IPv6 features like, MLD v1/v2, OSPFv3, VRRPv3 etc. and IPv6 management from day 1.	
<b>3.3</b>	<b>Reliability:</b>	
a)	Dual hot swappable Power supply Unit with 1 + 1 redundancy (Populated)	
b)	Hot swappable fan modules	
c)	Switches shall have graceful restart for OSPF/BGP	
d)	Mean Time between Failures: 50,000 hours or higher/more	
<b>3.4</b>	<b>Resiliency:</b>	
a)	Shall Support VRRP v2, VRRP v3.	
b)	Link Aggregation (IEEE 802.3ad)	
c)	Loop Protection and Loop Detection	
<b>3.5</b>	<b>IEEE Standards</b>	
a)	Necessary protocols, software, technology etc. shall be provided in the Switch to meet the Functional/Technical/Resiliency/Convergence requirement of the network as defined in the tender.	
b)	Internet Group Management Protocol v2 (IGMPv2), PIM-SM, OSPFv2 & OSPFv3	
c)	Configurable Guest and Auth-Fail VLANs	
d)	RADIUS, RADIUS Accounting	
e)	Tunnel Protocol Support	
f)	IEEE 802.1p Priority Tagging	
g)	DiffServ Precedence for 8 queues per port or equivalent	
h)	DiffServ Architecture	
i)	Multiprotocol Extensions for BGP-4	
j)	Border Gateway Protocol 4 (BGP-4)	
k)	Monitoring tools using sflow or equivalent	
l)	DHCP Server	
<b>3.6</b>	<b>Routing</b>	
a)	Policy based routing from day 1	
b)	Shall have VRRP V3 from Day 1	
c)	Shall have OSPF routes from day 1	
d)	Shall have BGPv4	
e)	Virtual Routing and Forwarding (VRF) or Equivalent	
f)	HSRP for IPv6 or equivalent	
g)	IPv6 routing from day 1, all the necessary software and hardware should be provisioned.	
h)	Shall have 4 K or more IPv4 routes in OSPF	
i)	Shall have 4 K or more IPv6 routes in OSPF	
j)	Shall have 4 K or more BGP routes	
<b>3.7</b>	<b>IPv6 Features</b>	

a)	IPv4 and IPv6 Dual Stack	
b)	IPv6 Management via Ping, Trace Route, Telnet and SSH	
c)	Static Unicast Routes for IPv6	
d)	DNS Extensions to support IPv6	
e)	Architecture for IPv6 Unicast Address Allocation	
f)	Neighbour Discovery for IPv6	
g)	Transmission of IPv6 Packets	
h)	Connection of IPv6 Domains via IPv4 Clouds	
i)	Internet Control Message protocol (ICMPv6)	
j)	IPv6 Addressing Architecture	
<b>3.8</b>	<b>Multicast Support</b>	
a)	PIM-SM, IGMPv3, LLDP-MED	
b)	Multicast Routing Protocols	
c)	IGMP & MLD snooping,	
<b>3.9</b>	<b>Security</b>	
a)	802.1x support	
b)	Dynamic or Private VLANs	
c)	NAC support (Open standards) or Equivalent	
d)	BPDU Protection and STP Root Guard	
e)	Switch shall provide the ability to monitor events and take corrective action proactively	
f)	RADIUS and RADIUS accounting	
g)	MAC address filtering and MAC limiting functionality.	
h)	Detection of Denial of Service (DoS) attack.	
i)	DHCP snooping, Dynamic ARP Inspection (DAI), IP source guard	
j)	Tri-authentication: MAC-based/web-based and IEEE 802.1x	
<b>3.10</b>	<b>Quality of Service</b>	
a)	Policy based QoS features	
b)	Highly configurable traffic classification	
c)	Mixed scheduling, to support complex traffic queuing requirements	
d)	8 QoS queues per port and support for Voice VLAN	
e)	Bandwidth monitoring	
f)	Access Control Lists (ACLs) and IEEE 802.1p Priority Tagging	
<b>3.11</b>	<b>Management:</b>	
a)	GUI, Telnet, Industry-standard CLI with built-in Help-menu	
b)	External memory card/USB or equivalent, allowing switch firmware, configurations to be stored for backup and distribution to other switches	
c)	Out of band 10/100/1000 Ethernet management port and console management port	
d)	Shall be provisioned with out of band management for monitoring, alerting, reporting, restart, configure BIOS, management etc. This shall be done using separate LAN connectivity to the administrator.	
e)	SSH and SNMPv3 for secure management	
f)	RADIUS Authentication, NTP and Syslog and sFlow or equivalent	
g)	Port mirroring and RMON / NETFLOW / SFLOW or equivalent technologies.	
h)	Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure	
<b>3.12</b>	<b>Approvals and Certifications:</b>	
a)	Certification EAL2/NDPP or equivalent MII (Make in India)	
b)	Certifications Hardware: UL, cUL or equivalent MII (Make in India)	
c)	Restrictions on Hazardous Substances (RoHS) Compliance or equivalent	
<b>3.13</b>	<b>Environmental Specifications:</b>	
(a)	Operating Temperature Range: 0°C to 40°C or better	
<b>3.14</b>	<b>Miscellaneous</b>	
a)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system.	
b)	The Technical Manual shall be provided containing all technical details, guidelines, procedure etc. for configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc..	
c)	All Licenses, User ids for technical support shall be in the name of AAI.	

## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

d)	OEM shall provide escalation matrix to resolve technical issues during installation and warranty period.	
e)	<i>Contractor shall provide an OEM MAF &amp; authorization confirming the compliance to above technical specifications, along with the OEM authorization letter.</i>	
<b>4.0</b>	<b>Distribution /ACCESS SWITCH:</b>	
	Preferred make: Access switch shall be of the same make as that of Core switch	
<b>4.1(a)</b>	<b>Port Density and Architecture</b>	
a)	All field replaceable modules shall be hot swappable (PSUs / fans modules) from day 1.	
b)	Switch shall be configured to provide Wire-Speed Non-Blocking Switching and Routing Performance at Layer 2 and Layer 3 on all ports.	
c)	Each switch shall configure with complete redundancy in key components including Power Supplies so that there is no single point of failure in the switch.	
d)	Shall have 02 Nos fibre ports to support 1G SFP & 10G SFP+. Switch shall be fully populated with 10 GE SM Fibre Transceiver.	
e)	Shall be equipped with 24 Nos of 1G Base T Port POE+ as per IEEE 802.3at.	
f)	One console port.	
g)	Shall support 802.3ad (LACP) with upto 6 ports	
h)	Wire speed non-blocking architecture & Wire-speed multicasting for IPv4 and IPv6 traffic on all ports.	
i)	The Switch shall be enabled/provided with Stacking or equivalent Technology to operate as single virtual logical switch.	
j)	The switch shall incorporate required technology /protocol to avoid/eliminate forwarding the network traffic in network loop.	
k)	Switch and Transceivers shall be of same make.	
l)	The switch shall be a basic layer 3 Switch.	
<b>4.2</b>	<b>Performance</b>	
a)	Forwarding Rate: 65 Mpps or higher	
b)	Switching Fabric 88 Gbps or higher	
c)	Extensive wire-speed traffic classification for ACLs and QoS	
d)	9KB Jumbo frame size	
e)	Wire-speed multicasting on all ports.	
f)	16 K or higher MAC addresses,	
g)	Minimum 4 K multicast routes and 8 K unicast routes IPv4	
h)	Minimum 2 K multicast routes and 4 K unicast routes IPv6	
i)	Active 4K VLANs and 4 K VLAN Ids	
j)	Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure	
<b>4.3</b>	<b>Reliability</b>	
a)	MTBF: Min 50,000 hours or higher /more	
b)	Dual hot swappable PSUs with 1 + 1 redundancy (Populated)	
<b>4.4</b>	<b>IEEE Standards</b>	
a)	Necessary protocols, software, technology etc. shall be provided in the Switch to meet the Functional/Technical/Resiliency/Convergence requirement of the network as defined in the tender.	
b)	Configurable Guest and Auth-Fail VLANs.	
c)	RADIUS	
d)	Tunnel Protocol Support	
e)	IEEE 802.1p Priority Tagging	
f)	DiffServ Precedence for 8 queues per port or equivalent	
g)	DiffServ Architecture	
h)	Monitoring tools sFlow or equivalent	
i)	DHCP Server	
j)	Internet Group Management Protocol v2 (IGMPv2), PIM-SM,	
k)	classification by protocol / port in the switch/network	
l)	VLAN tagging in the switch/network.	
m)	Double tagging shall be available in network.	
<b>4.5</b>	<b>Resiliency</b>	
a)	Link Aggregation (802.3ad) groups	
b)	Loop Protection and Loop Detection	
<b>4.6</b>	<b>Routing</b>	
a)	Switch shall have L3 feature like OSPF V2, OSPF v3, BGP, Policy based routing.	

b)	Static Routing.	
c)	IPv6 routing support from day 1, all the necessary software and hardware shall be provisioned.	
d)	Minimum 4 K multicast routes and 16 K unicast routes IPv4	
e)	Minimum 4 K multicast routes and 8 K unicast routes IPv6	
<b>4.7</b>	<b>IPv6 Features: -</b>	
a)	IPv4 and IPv6 Dual Stack	
b)	IPv6 Management via Ping, Trace Route, Telnet and SSH	
c)	Static Unicast Routes for IPv6	
d)	DNS Extensions to support IPv6	
e)	Architecture for IPv6 Unicast Address Allocation	
f)	Neighbors Discovery for IPv6	
g)	Transmission of IPv6 Packets	
h)	IPv6 Router Alert Option	
i)	Internet Control Message protocol (ICMPv6)	
j)	IPv6 Addressing Architecture	
<b>4.8</b>	<b>Multicast Requirements:</b>	
a)	Multicast routing protocol PIM-SM	
b)	LLDP-MED,	
c)	MLD snooping, Multi VLAN Registration (MVR)	
d)	IGMP, IGMPv3.	
<b>4.9</b>	<b>Security</b>	
a)	802.1x support	
b)	Dynamic & Private VLANs	
c)	NAC support (Open standards) or Equivalent	
d)	BPDU Protection and STP Root Guard	
e)	Switch should provide the ability to monitor events and take corrective action proactively.	
f)	RADIUS/ TACACS + and RADIUS accounting.	
g)	MAC address filtering and MAC limiting functionality.	
h)	Detection of Denial of Service (DoS) attack.	
<b>4.10</b>	<b>Quality of Service</b>	
a)	Policy based QoS features	
b)	Highly configurable traffic classification	
c)	Mixed scheduling, to support complex traffic queuing requirements	
d)	8 QoS queues per port and support for Voice VLAN	
e)	Bandwidth monitoring. /metering	
f)	Access Control Lists (ACLs) and IEEE 802.1p Priority Tagging	
<b>4.11</b>	<b>Management:</b>	
a)	GUI, Telnet, Industry-standard CLI with built-in Help-menus, GUI through NMS	
b)	An External memory card /USB or equivalent, allowing switch firmware, configurations to be stored for backup and distribution to other switches	
c)	Console management Port.	
d)	SSH and SNMPv3 for secure management	
e)	RADIUS Authentication, NTP and Syslog and sFlow or equivalent	
f)	Port mirroring and RMON (4 Groups)	
g)	Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure.	
<b>4.12</b>	<b>Approvals and Compliances</b>	
a)	Certification EAL2/NDPP or equivalent MII	
b)	Certifications Hardware: UL, cUL or equivalent MII	
c)	Restriction of Hazardous Substances (RoHS) Compliance and Energy Efficient Ethernet compliant (EEE) compliance or equivalent	
<b>4.13</b>	<b>Environmental Specifications:</b>	
a)	Operating Temperature Range: 0°C to 40°C or better	
<b>4.14</b>	<b>Miscellaneous</b>	
a)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system.	
b)	The Technical Manual shall be provided containing all technical details, guidelines,	

## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

	procedure etc. for configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc..	
c)	All Licences, User ids for technical support shall be in the name of AAI.	
d)	OEM shall provide escalation matrix to resolve technical issues during installation and warranty period	
e)	<i>Contractor shall provide an OEM MAF &amp; authorization confirming the compliance to above technical specifications, along with the OEM authorization letter.</i>	
<b>5.0</b>	<b>Network Access Control (NAC)/AAA SERVER:</b>	
a)	NAC/AAA Server shall have hot swappable power supply	
b)	Shall be licensed to minimum 50 concurrent end-user/end-points and scalable to 100.	
c)	Shall be licensed to support at least 50 authenticators both, wired & wireless (Network devices).	
d)	802.1X Based Device Authentication.	
e)	MAC Based Authentication.	
f)	Captive portal Access.	
g)	Shall be Unix/Linux/BSD based.	
h)	Certificate based authentication.	
i)	Encryption based on Digital Signature algorithm or equivalent functional encryption protocols.	
j)	Backend authentication mechanisms into Radius (Proxy) and Active Directory.	
k)	Shall have the ability to load external certificates for TLS authentication.	
l)	Standards-based and vendor- agnostic, interfacing seamlessly with network access equipment from different manufacturer/vendors.	
m)	Shall adhere to Radius / AAA open standards.	
n)	Authentication Protocols to support EAP - TLS, TTLS, PAP and MD5	
o)	Shall be compatible and interoperable with current network configurations and shall support future network configurations.	
p)	Shall seamlessly integrate with the switching solution proposed for AAA and Dynamic VLAN allocation for roaming user profiles	
q)	Dynamic Statistics and reports to track / View all the authentication requests / track the duration of user connection with Radius accounting	
r)	Provide high level visibility to Administrators to track who logged onto or disconnected from the RADIUS server / network	
s)	Shall support IPv6	
t)	Shall have the ability to support complex rule sets based on; -Username -Inbound User Attributes -Inbound Authenticator Attributes -User Group membership -Day and Time and Day	
u)	Shall have the ability to configure custom defined outgoing radius attributes.	
v)	Shall generate Reports on authentication statistics	
w)	In case Contractor proposes 3rd party Radius server, the proposed solution shall provide all the interoperability reports certified by both the RADIUS Server vendor and Network switching manufacturer on seamless interoperability	
x)	Shall support for Web based user authentication.	
y)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system.	
z)	The Technical Manual shall be provided containing all technical details, guidelines, procedure etc. for configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc..	
aa)	OEM shall provide escalation matrix to resolve technical issues during installation and warranty period	
ab)	Certification EAL2/NDPP or equivalent MII	
ac)	Certifications Hardware: UL or equivalent MII	
<b>6.0</b>	<b>FIREWALL</b>	
<b>6.1</b>	<b>General Requirements:</b>	
a)	Shall be Appliance based Multi-function Firewall providing Firewall, NAT, Intrusion Prevention system (IPS), Antivirus and content Filtering from day 1 including Licenses.	
b)	2 X 1 Gigabit Ethernet SFP ports.	



## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

c)	4 Nos of 10/100/1000 Base-T Gigabit Ethernet ports with auto sensing.	
d)	The platform shall be based on real time, secure embedded operating system	
e)	The device shall support IPv6	
f)	Hot swappable redundant power supply	
g)	Shall support Configurable Security policies for each virtual system.	
h)	Shall provide Http, Https, SSH, Telnet, SNMP based management console for managing and configuring various components of the firewall appliance.	
i)	The Firewall Appliance shall be rack mountable.	
j)	License shall be for life time of the system.	
<b>6.2</b>	<b>PERFORMANCE REQUIREMENTS:</b>	
a)	Firewall shall have Multi-protocol throughputs of 250 Mbps or Better.	
b)	Firewall shall have 3DES, AES – IPSEC VPN throughput of at least 50.0 Mbps or more	
c)	Shall have IPS Throughput of 100.0 Mbps or better	
d)	Minimum 128 concurrent VPN peers both IPsec & SSL.	
e)	Shall support concurrent session of at least 64 K	
f)	Shall support new session per second of at least 6,000	
g)	VLAN 1024 or more.	
<b>6.3</b>	<b>Networking &amp; System:</b>	
a)	The platform shall support the standards-based Link aggregation technology (IEEE 802.3ad) to achieve higher bandwidth.	
b)	IEEE 802.1q VLAN Tagging for 1024 VLANs supported.	
c)	Dynamic Routing Protocol for RIP1 & 2, OSPF, OSPFv3, BGP4,	
d)	Static, Policy Based, and Multicast routing	
e)	Client to Site VPN Tunnels up to 256	
f)	Minimum 50 or more SSL VPN users	
g)	Routing over IPsec Tunnels	
h)	IPv4 and IPv6 routing	
i)	VRRP	
j)	Multicast Features: Multicast Listener Discovery (MLD), PIM-SM, IGMP v1/v2/v3, Source Specific Multicast (SSM)	
<b>6.4</b>	<b>Operating System &amp; Management Requirements:</b>	
a)	Upgradeable via Web or TFTP	
b)	Shall be easy to backup and restore via GUI and CLI to/from local PC, remote management or USB disk.	
c)	Console, Telnet and Web management.	
d)	System shall support profile-based login account administration, offering gradual access control such as for Policy Configuration or Log Data Access	
e)	Limit remote management access from certain trusted networks or hosts with corresponding administrator account	
f)	Facilitate administration audits by logging detailed activities to event log for management & configuration updates	
g)	Shall support SNMPv2 and SNMPv3	
h)	Real-time traffic-interface/sub interface statistics.	
<b>6.5</b>	<b>FIREWALL REQUIREMENTS:</b>	
a)	Integrated Traffic Shaping / QoS functionality	
b)	DHCP server & DHCP Agent functionality	
c)	Network address translation (NAT).	
d)	Policy based NAT (Static / Dynamic)	
e)	Inbound Port Forwarding.	
f)	IPv6 ACL to implement security Policy for IPv6 traffic	
g)	All internet applications shall be supported for filtering like Telnet, FTP, SMTP, HTTP, DNS, SIP, DHCP, SNMP, H.323, RPC BGP, NFS, ICMP, IMAP etc.	
h)	Shall be able to inspect HTTP and FTP traffic when these are deployed using non-standard ports (i.e. when HTTP is not using standard port TCP/80)	
i)	TLS, SSL Decryption without affecting the system performance.	
j)	Class-based queuing with prioritization	
k)	Queuing based on VLAN, Filters and Bundles.	
l)	Marking, policing, and shaping.	
m)	Protection against server application attacks and client application attacks	
n)	Inbound and outbound application policies.	
o)	Inbound and outbound identity policies.	

p)	Minimum 50 IPs/User licenses for Firewall / VPN (IPSec & SSL)/ IPS/WCF.	
q)	Stateful protocol signatures with protocol anomaly detection.	
r)	Tunnels (GRE, IP-in-IP, IPSec).	
s)	AAA using RADIUS or equivalent.	
t)	Shall have Stateful Firewall	
u)	Packet Filters	
v)	MD5 and SHA-1 authentication	
<b>6.6</b>	<b>NETWORK INTRUSION DETECTION &amp; PREVENTION REQUIREMENTS:</b>	
a)	Network attack detection.	
b)	Prevent denial of service and Distributed Denial of Service attacks.	
c)	Shall have a built-in Signature and Anomaly based IPS engine.	
d)	Signature based detection using real time updated database.	
e)	Anomaly based detection.	
f)	The device shall allow administrators to create Custom IPS signatures	
g)	Shall have Configurable IPS filters to selectively implement signatures based on severity, target (client/server), protocol, OS and Application types.	
h)	Automatic security updates directly over the internet. (i.e., no dependency of any intermediate device)	
i)	Security check updates shall not require reboot of the unit.	
j)	Attack recognition inside IPv6 encapsulated packets.	
k)	User-defined signatures with Regular Expressions.	
<b>6.7</b>	<b>CONTENT FILTERING REQUIREMENTS:</b>	
a)	Shall have integrated Web Content Filtering solution.	
b)	URL filtering functionality with minimum of 75 pre-defined categories.	
c)	Creation of custom URL categories for allowing/blocking specific destinations as required by user.	
d)	Enable or disable Web Filtering as per firewall policy or based on firewall authenticated user groups for both HTTP and HTTPS traffic.	
e)	Shall be able to block web plug-ins such as ActiveX, Java Applet, and Cookies.	
f)	Shall include Web URL block, Web Exempt List	
g)	The solution shall allow administrators to create multiple new local URL filtering categories besides dynamic categories.	
<b>6.8</b>	<b>IPSEC VPN Requirements:</b>	
a)	The IPSEC VPN and SSL VPN capability shall minimally attain Internet Computer Security Association (ICSA) Certification or equivalent	
b)	The proposed system shall comply/support industry standards, L2TP, PPTP, IPSEC, OpenVPN and SSL VPN.	
c)	Shall have IPSEC (DES, 3DES, AES) encryption/decryption, SSL encryption/decryption.	
d)	The system shall support the following IPSEC VPN capabilities: <ul style="list-style-type: none"> <li>Multi-zone VPN supports</li> <li>IPSec, ESP security Supports Aggressive and Dynamic mode</li> <li>Support perfect forward secrecy group 1 and group 2 configuration</li> <li>MD5 or SHA1 authentication and data integrity</li> <li>Automatic IKE (Internet Key Exchange) and Manual key exchange</li> <li>Supports NAT traversal</li> <li>Supports Extended Authentication</li> <li>Supports Hub and Spoke architecture</li> <li>Supports Redundant gateway architecture</li> <li>DDNS support</li> </ul>	
<b>6.9</b>	<b>SSL VPN Requirements:</b>	
a)	The Firewall shall support at least Tunnel mode for remote computers that run a variety of client and server applications	
b)	The system shall provide SSL VPN tunnel mode that supports 32 and 64-bit operating systems.	
<b>6.10</b>	<b>Antivirus Requirements:</b>	
a)	The Antivirus capability shall minimally attain Internet Computer Security Association (ICSA) AV Certification or equivalent	
b)	Shall be able to scan HTTP, HTTPS, SMTP, POP3, IMAP protocols and block, allow or monitor using based on firewall policy	
c)	Shall provide ability to scan, allow, block and intercept (allow but quarantine) attachments or downloads according to file extensions and/or file types as per firewall	

## **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

	policy.	
d)	The proposed system shall be able to block or allow oversize files based on configurable thresholds for each protocol types and per firewall policy.	
e)	The solution shall be capable scanning Encrypted VPN tunnel traffic originating for virus.	
<b>6.11</b>	<b>CERTIFICATIONS</b>	
a)	The Firewall shall be ICSA Labs certified for ICSA 4.0 or EAL4 certified or Equivalent MII	
b)	The IPS capability shall minimally attain Internet Computer Security Association (ICSA) NIPS or NSS Certification or equivalent MII	
<b>6.12</b>	<b>MISCELLANEOUS</b>	
a)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system. Copy of registration shall be shared with AAI.	
b)	The Technical Manual shall be provided containing all /most technical details, guidelines, procedure etc. for configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc..	
c)	All Licences, User ids for technical support shall be in the name of AAI, Copy of License Registration with User Id shall be shared with AAI	
d)	OEM shall provide escalation matrix to resolve technical issues during installation and warranty period	
<b>7.0</b>	<b>NETWORK TIMING PROTOCOL SERVER:</b>	
<b>a)</b>	Multi GNSS reception of GPS, GLONASS etc. for improved reliability and redundancy.	
b)	GPS satellite supported L1/L2/L5 frequency NTP SERVER to maintain and synchronise time across the IP based Time display clocks.	
c)	Shall be STRATUM 1 compliant (ITU-T G.811) NTP Server with GPS and Stratum 2 on hold over.	
d)	NTP server shall act as a master clock in the network to which other clients shall interconnect over the network using NTP client software and synchronize periodically.	
e)	It shall take input from GPS/GLONASS satellites using externally mounted antenna and give outputs of NTP on GbE Ports IPv4/IPv6 Ethernet port, RS 485 port/ RS232 port and 1 PPS signal for dependent systems synchronization.	
f)	Shall Synchronize minimum of 100,000 or more clients at default NTP polling frequency.	
g)	Four Nos 1 GbE ports (RJ45/SFP) Auto-Sensing Network Interfaces. Fibre ports shall be fully loaded with SM Fibre transeiver module.	
h)	One Console/management Port for Configuration and Status	
i)	Shall have system status monitoring through digital display.	
j)	The NTP system shall allow basic configurations of the system by the user.	
k)	Shall be compliant to Internet Protocol (IP) IPv4, IPv6.	
l)	Shall support Timing Protocols like NTP v2, NTP v3, NTP v4, SNTP v3, SNTP v4, NTP MD5 Authentication.	
<b>m)</b>	Configuration and Monitoring using HTTPS/SSH/FTP/SNMPv1, SNMPv2.	
n)	Monitoring and Reporting SNMP v1/v2.	
o)	GPS/GNSS 32 Channel Multi-GNSS receiver for GPS, GLONASS etc.	
p)	Time-Receiver Autonomous Integrity Monitoring. High Sensitivity Outdoor Antenna Operation.	
<b>q)</b>	GPS/GNSS Antenna for outdoor use, pole mounts with Connecting RF cable of minimum Length 30 meters.	
r)	Lightening/Surge Protection device having surge handling capability of 20KA or better for 8/20 microsecond pulses (multiple) shall be provided to protect for any surge entry through Cables from Antenna.	
s)	Shall show synchronization status on the front panel using digital display	
t)	Dual redundant Power supply.	
u)	GPS Receiver accuracy < 30 nanoseconds, when Locked.	
v)	Accuracy to UTC < ± 30 ms using GPS and internal OCXO	
w)	Stratum 1-time stamp over Ethernet	
<b>8.0</b>	<b>NTP BASED SINGLE SIDED 100 mm LED DIGITAL DISPLAY CLOCK</b>	
a)	The display size 100mm, format HH:MM: SS in green/yellow/amber display colour, selectable in 12/24 Hours' time format.	
b)	The digital clock shall have elegant and slim clock frame, made of aluminium, powder	



## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

	coated in black colour and front cover made of dark plexi-glass (antiglare) for best readability over a wide viewing angle of 160 degree	
c)	The digital clock shall have mechanism for configuration of all parameters.	
d)	Configuration through DHCP/manual or through telnet and monitoring through SNMP.	
e)	Synchronization input: NTP, Self-setting time code from any make standard NTP server.	
f)	Powering: PoE/POE+.	
g)	The digital clock shall have internal time base and shall maintain internal RTC with battery back for at least 1 hours or more in case of Power failure and shall be capable to synch with NTP on restoration of power/network.	
h)	The digital clock shall have accuracy better than +/- 0.1 s to the incoming synchronization signal and +/- 0.3 s per day without synchronization in holdover mode.	
i)	The digital clock shall indicate synchronization state by visual indication.	
j)	The digital clock shall indicate un-synchronization state by means of flashing visual indication.	
k)	The digital clock shall have configurable internal Time zone table	
l)	The digital clock shall have automatic or manual display brightness control configurable in steps.	
m)	Wall mounting provision/wall bracket mounting/Ceiling suspension shall be provided for clock depending on the actual site conditions.	
n)	All the digital clock shall be fully accessible through GUI based Network Management System for administration, supervision and maintenance	
o)	Operating conditions <ul style="list-style-type: none"> <li>- Temperature: - 5 to +45 °C</li> <li>- Humidity: 0 to 80% (without condensation)</li> <li>- protection degree: IP 54 (Protection against dust &amp; Water)</li> </ul>	
p)	Character display Size 100 mm	
q)	The clock must confirm to compliance such as Electrical Safety, EMC, Environmental compliance as follows: - <ul style="list-style-type: none"> <li>- Electrical safety: EN 60950 or equivalent</li> <li>- EMC: EN 55022 (2010), class B; EN 55024(2010); EN 50121-4/Cor. (2008) or equivalent</li> <li>- Ingress Protection: IP 54 EN 60529 or equivalent ROHS compliant</li> </ul>	
<b>9.0</b>	<b>ADMINISTRATIVE LAPTOP:</b>	
a)	64 bit, Processor, fully installed Dual Core, operating at base Frequency 2.0 GHz, 8 MB or higher cache	
b)	RAM: 16.0 GB SDRAM, DDR 4, 2400 MHz	
c)	Hard Disk: 1 TB SSD	
d)	Display/Monitor: 13 inch or more, HD resolution (1366 X 768), Anti-Glare,	
e)	Dual Display Support: Yes.	
f)	Minimum 03 Nos (Three) V 2.0 & V 3.0 USB ports. At least One to be USB 3.0	
g)	Inbuilt Stereo Speakers.	
h)	One (1) HDMI port	
i)	One Number of Integrated Gigabit Ethernet (10/100/1000) Card,	
j)	Wifi compatibility: Fully ready compatible with IEEE802.11a/b/g/n,	
k)	Integrated Bluetooth	
l)	AC adaptor with power cord	
m)	Input: 100 V to 240 V AC , 50 Hz/60 Hz	
n)	Lithium Ion battery-with Minimum Back Up time 4 hours.	
o)	64 Bit Microsoft windows 10, Professional with License.	
p)	MS Office latest Professional with License.	
q)	Good quality Executive, Nylon carrying case.	
<b>10.0</b>	<b>NMS SYSTEM:</b>	
a)	NMS offered shall have full features to manage, configure all the network devices/elements and monitor all the network elements & end devices.	
b)	Management, Configuration and monitoring of minimum 100 network devices.	
c)	Monitoring scalable to 200 devices	
d)	Shall discover all IP devices and nodes attached to the network, including switches, routers, firewalls and gateways,	
e)	The system shall Automatically discover network topology, network devices present on the network and shall be displayed on GUI.	
f)	The system shall create network maps for Layer 3 & Layer 2 network and all the available	

## S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

	VLANs.	
g)	The system shall have the ability to configure all network element/devices configuration, parameters using a graphical interface.	
h)	The system shall have multi user web-based interface.	
i)	The system shall have the ability to manage network node configuration backup on a scheduled basis,	
j)	The system shall schedule Device configuration back-up and restore functionality	
k)	Creation and management of security and QoS policies	
l)	Automatic Detection of configuration changes.	
m)	Shall support 3rd party network devices.	
n)	Shall have the functionality of Group provisioning / Scheduled configuration roll out management.	
	Shall have the ability to perform scheduled or Unscheduled network wide software or Firmware upgrades	
	Shall have the ability to create group (of devices) for applying same task.	
o)	Shall have the ability bulk configure parameters across many network devices from a single interface.	
p)	Shall have the ability to push custom script files to the network nodes.	
q)	The system shall high level Network Inventory polling capability for IP Network nodes, all available line cards/modules, ports, Physical links, VLAN interfaces and all the other SNMP capable devices in the network.	
r)	Network device monitoring at the device level to determine the health of network components and the extent to which their performance matches with the capacity/service-level.	
s)	Monitor network performance such as bandwidth utilization, packet loss, latency, availability and uptime of Core Switch/router, switches and other Simple Network Management Protocol (SNMP) enabled devices connected to the network.	
t)	Shall have extensive fault management capabilities with Real time Event and Alarm notifications, System Logs and keep an audit trail of configuration changes made by users.	
u)	Event notification: Configurable alerts that respond to specific network scenarios/event and send notifications by sending emailing or text messages to the network administrator/designated user.	
v)	Shall have the ability to customize the NMS GUI/dash board as per the requirements of the users.	
w)	Shall have centralized built-in trouble shooting tools.	
x)	<b>Hardware for the NMS shall have following minimum specifications</b>	
i)	64-bit, Processor, Quad Core, operating at base Frequency 2.0 GHz or more with 8 MB Cache.	
ii)	RAM: 32.0 GB, DDR 4, 3200 MHz, expandable up to 64 GB.	
iii)	Hard Disk 1TB SSD and 1TB SATA	
iv)	USB Port: Four Port V2.0 & V3.0, out of these at least Two shall be V3.0. Minimum 02 Nos in Front.	
v)	Keyboard Mouse: Standard KB and Optical scroll mouse	
vi)	Inbuilt Stereo Speakers.	
vii)	Integrated NIC: Two (02) Nos of Integrated Gigabit Ethernet (10/100/1000) Card, Wake on LAN.	
viii)	Monitor LED Backlit: <ul style="list-style-type: none"> <li>Monitor, 40" or higher.</li> <li>Aspect Ration 16:9 (or better)</li> <li>Max/Native Resolution: 1920 X 1080 @ 60 Hz or better</li> <li>Contrast ratio: 700:1 or better</li> <li>Brightness: 250 cd/m<sup>2</sup> or better</li> </ul>	
ix)	Operating System: LINUX or 64-Bit Microsoft windows 10 or Latest Professional License or as per the requirements of NMS applications.	
<b>11.0</b>	<b>Hardware for AAA Server</b>	
a)	Server Intel Xeon Based, Dual processor, 8 Core, 16 MB Cache or better.	
	RAM 32 GB or higher, DDR4, 3200MHz	
b)	HDD: NL-SAS or SSD drives, hot-swappable, loaded with minimum storage space of c) or higher.	
c)	Server shall have RAID controller supporting RAID 0, 1, 5, 6, 10, configurations.	
d)	Shall be provisioned with <b>out</b> of band management for monitoring, alerting, reporting, remote power on/off, restart, configure BIOS, management etc. This shall be done	

## **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

	using separate LAN connectivity to the administrator.	
e)	<b>SYSTEM MANAGEMENT:</b> <ul style="list-style-type: none"> <li>• Server shall support configuring and booting securely with industry standard Unified Extensible Firmware.</li> <li>• Essential tools/drivers to setup, deploy and maintain the server shall be provisioned.</li> <li>• Systems Management software shall provide Role-based security.</li> <li>• Shall support automatic event handling that allows configuring policies to notify failures via e-mail, or SMS or automatic execution of scripts.</li> <li>• Shall support system data collection and enable users to generate reports in HTML, CSV or XML format.</li> </ul>	
f)	<b>Remote Management:</b> <ul style="list-style-type: none"> <li>• System remote management shall support browser based graphical remote console, remote boot. It shall be capable of offering upgrade of software and patches from a remote client using Media/image/folder.</li> <li>• Server shall support agentless management using the out-of-band remote management port.</li> <li>• The server shall support monitoring and recording changes in the server hardware and system configuration.</li> <li>• Terminal Services (Microsoft), 128-bit SSL encryption and Secure Shell Version 2 support.</li> <li>• Shall provide remote firmware update functionality.</li> </ul>	
g)	Server shall have Support for advanced memory redundant technologies like Advanced error-correcting code (ECC) and memory mirroring.	
h)	4 Nos 1GbE LAN Ports.	
i)	At least 2 USB ports,	
j)	Hot swappable redundant fan.	
k)	Hot swappable redundant power supplies.	
l)	Rack mount with rapid rail	
m)	The hardware requirements mentioned above are minimum requirements for Server. However, in order to meet the tendered requirements and functionalities of IP PBX, scalability requirements and expansions etc., the Contractor shall provide enhanced hardware/components required for servers.	
n)	Software License, user license and any other License associated/required with the device/system for meeting the specification/requirements shall be registered and issued in the name of AAI with the supply of the device/system. Copy of registration shall be shared with AAI.	
o)	The Technical Manual shall be provided containing all /most technical details, guidelines, procedure etc. for configuration, management and troubleshooting the device/system. OEM shall provide user registration through its web portal for online technical support, access to technical documents, software downloads, software upgrade etc..	
p)	All Licenses, User ids for technical support shall be in the name of AAI, Copy of License Registration with User Id shall be shared with AAI	
<b>12.0</b>	<b>WORKSTATION HARDWARE</b>	
a)	64-bit, Processor, Quad Core, operating at base Frequency 2.0 GHz or more with 8 MB Cache.	
b)	RAM: 16.0 GB, DDR 4, 3200 MHz, expandable up to 32 GB.	
c)	Hard Disk: 1TB SSD and 1TB SATA	
d)	PCI Slot: Minimum 01 Nos Free Slots	
e)	Serial COM Port: At least 01 Nos (One).	
f)	USB Port: Four Port V2.0 & V3.0, out of these at least Two shall be V3.0. Minimum 02 Nos in Front.	
g)	Keyboard Mouse: Standard KB and Optical scroll mouse	
i)	Inbuilt Stereo Speakers.	
j)	Optical Drive: 8 X DVD +/- RW.	
k)	Integrated NIC: Two (02) Nos of Integrated Gigabit Ethernet (10/100/1000) Card,	
l)	Wi-Fi 802.11AC	
m)	<b>Monitor:</b> <ul style="list-style-type: none"> <li>• Monitor, 27" or higher.</li> <li>• Aspect Ration 16:9 (or better)</li> <li>• Max/Native Resolution: 1920 X 1080 @ 60 Hz or better</li> <li>• Contrast ratio: 700:1 or better</li> </ul>	

	<ul style="list-style-type: none"> <li>Brightness: 250 cd/m<sup>2</sup> or better</li> <li>Height Adjustable &amp; swivel</li> </ul>	
n)	Operating System: 64 Bit Microsoft windows10 or Latest Professional License.	
o)	MS Office Latest professional Licensed version	
<b>13.0</b>	<b>LC-LC Type 9/125µm Single mode Duplex Tight buffered OS2 Optical Fiber Patch Cords: -</b>	
a)	Length: 1 and 3 mtr, as per site requirement	
b)	Connectors: The optical fiber patch leads shall comprise of Single mode 9/125µm fiber with 2 X LC type fiber connectors terminated at each end of fiber patch cord.	
c)	Buffer Diameter: 900µ tight buffer.	
d)	Strength Member: Aramid Yarn	
e)	Connector Loss: 0.30dB(max)	
f)	Pull-out force: ≥ 100 N (per connector)	
g)	Jacket Material: LSZH or better as per IEC 60332-1-2, IEC 60332-3-24, IEC 60754-1, IEC 60754-2, IEC 61034-2	
h)	Operating Temperature: 0°C to 60°C	
<b>14.0</b>	<b>CAT 6 A RJ45 Connector for CAT U/FTP cable</b>	
a)	CAT 6A RJ45 jack module suitable for 1GBase-T applications, complying with relevant TIA/EIA standards, IEEE 802.3an up to 500 MHz and 100 m distance.	
b)	CAT 6A RJ45 jack module shall be compliant with CAT 6A U/FTP standard & POE+ standard.	
c)	CAT 6A RJ45 jack shall accommodate 22 to 24 AWG solid copper wire.	
d)	CAT 6A RJ45 jack shall have Contact Plating of 50µ" Gold/100µ" Nickel.	
e)	CAT 6A RJ45 jack shall have contact material of copper alloy	
f)	CAT 6A RJ45 jack shall fit into faceplates, surface-mount boxes, consolidation point boxes, and Modular Panels	
g)	CAT 6A RJ45 jack shall be mountable either at 90 degrees (straight) or 45 degrees (angled) in any faceplate.	
h)	CAT 6A RJ45 jack shall be certified by independent labs like ETL or equivalent.	
i)	CAT 6A RJ45 jack shall be RoHS Compliant	
<b>15.0</b>	<b>Fully loaded 24 port Category- 6A U/FTP Modular Patch Panel</b>	
a)	Patch panel shall be 19" rack mountable, of height 1U, constructed of cold-rolled steel.	
b)	Compliant with CAT 6A U/FTP standard, IEEE 802.3an for 1G BASE-T & POE+ Standard	
c)	Shall have cable retention and cable management	
d)	Shall have both front & rear labelling options	
e)	Patch panel shall have 24 ports loaded with RJ45 jacks in straight fashion meeting specifications of CAT 6A RJ45 jack for CAT 6A U/FTP cable given in tender	
f)	Patch panel shall have icons on each of 24-ports	
g)	Shall be possible to work on an individual cable/jack without disturbing other cables/connectors/jacks	
h)	Patch panel shall be ROHS Compliant	
<b>16.0</b>	<b>Cat 6A U/FTP LSZH Patch Cord,</b>	
a)	Patch Cord Length shall be 3m / 5m (as per site requirement)	
b)	All components/material used in the Patch cord shall be POE+ compliant.	
c)	Patch cord shall conform to Category 6A U/FTP standards/requirements	
d)	Support network line speeds up to 1 Gbps.	
e)	POE+ compliant RJ-45 plugs suitable for CAT 6A U/FTP cable of stranded copper at both the ends	
f)	Outer jacket shall be of LSZH	
g)	Patch cord shall be RoHS Compliant	
<b>17.0</b>	<b>CAT 6A RJ45 Connector for CAT 6A TP cable:</b>	
a)	CAT 6A RJ45 jack module suitable for 1 G Base-T applications, complying with relevant TIA/EIA standards, IEEE 802.3an.	
b)	CAT 6A RJ45 connector shall be compliant with CAT 6A FTP standard & POE+ standard.	
c)	CAT 6A RJ45 connector shall accommodate 22 to 24 AWG solid copper wire.	
d)	CAT 6A RJ45 connector shall have Contact Plating of 50µ" Gold/100µ" Nickel.	
e)	CAT 6A RJ45 connector shall have contact material of copper alloy	
f)	CAT 6A RJ45 connector shall be RoHS Compliant	

<b>18.0</b>	<b>Single RJ 45 Port CAT 6A U/FTP Fully loaded gang wall plate with surface mount back box</b>	
a)	Loaded box shall have RJ45 jack module, single port.	
b)	Loaded box shall have suitable surface mount back box along with fittings (screws, holes etc.) and other accessories for mounting on wall	
c)	Complete assembly shall be Suitable for 1Gbase-T applications in acc. With IEEE 802.3an up to 500 MHz and 100 m.	
d)	Loaded box Shall be fitted with one Category 6A, RJ45 jacks' module in angular fashion meeting specifications of CAT 6A RJ45 jack for CAT 6A U/FTP cable in this tender	
<b>19.0</b>	<b>Equipment Rack 42 RU</b>	
a)	Rack shall be of 42RU height (straight longitudinal) only, width (straight latitudinal) shall be of 800 ±10 mm and its depth shall be of 1000 ± 10 mm only and shall be constructed using minimum 18 Gauge Mild Steel Sheets painted with corrosion resistant paint then powder coated with textured polyester (Mat finished).	
b)	Rack Front shall have glass door with 3-point lock system, approximately 70% transparent, clear brown toughened single piece of glass.	
c)	Rack Front and Rear doors shall be on Hinges & shall open completely	
d)	Rack Rear doors shall be perforated up to 50 % only	
e)	Rack Sides Panel shall have no more than 10% perforations with latch lock arrangement and shall be removable by user as per requirements	
f)	Rack shall have 04 Nos 4" Blower/FAN of 1ph 230 V AC installed on top of rack for air to be expelled out and Blower/FAN power on/off control.	
g)	Rack shall have Vertical Cable Manager on both sides.	
h)	Minimum 06 Shelves, complete with installation material.	
i)	RoHS compliance	
j)	Vertical Power Distribution Unit having 5/15 A (as per site requirements) with fuse, power indicator	
<b>20.0</b>	<b>Equipment Rack 9 RU</b>	
a)	Rack shall be wall mount, 9 RU height (straight longitudinal) only, 19" width (straight latitudinal) X 600 or more width, depth of 600 mm or more, minimum 18 Gauge Mild Steel Sheets painted with corrosion resistant paint, powder coated with textured polyester (Mat finished).	
b)	Rack Front shall have glass door with 3-point lock system, approximately 70% transparent, toughened single piece of glass.	
c)	Rack Front doors shall be on Hinges & shall open completely.	
d)	Rack Sides Panel shall have no more than 10% perforations with latch lock arrangement and shall be removable by user as per requirements.	
e)	Rack shall be with appropriate size/capacity cable manager on both sides.	
<b>21.0</b>	<b>Installation Accessories:</b>	
a)	<b>Tools:</b> Network Tool Kit containing LAN Cable Tester, data Cable Crimping Tool for RJ45, RJ 11, Cable Cutter and Stripper, of reputed make shall be provided. A portable Industrial Handheld Label printer shall provide with the installation meeting minimum requirement of Tape Technology: Laminating Thermal Transfer, Tape type :Standard adhesive, extra strength adhesive, flexible ID Tape , Heat shrink Tube , Temper evident , Tape size from 6mm to 24mm with print height of 18mm (minimum), resolution of 180Dpi, fully automatic tape cutter, USB PC interface with Windows 8/7 support, QWERTY keyboard LCD Display, software Features such as Label Design, cable 77 labeling etc. user configurable Font of 9pt to 48 pt. with Built In Industrial Symbols, Long Life Lithium-Ion rechargeable Batteries , protective Carrying Case, AC Adaptor.	
b)	<b>Installation materials:</b> All installation materials as per the requirement of sites such as mounting poles, flexible conduit, cable management system, Nut, bolt, Cable ties (shall be weather proof UV Stabilized Nylon 6.6 cable ties for outdoor use in continuous or extended exposure to sunlight), 10 ft Aluminum Ladder (01 Nos, adjustable from 5 to 10 ft) etc. Shall be supplied. All cable and connector shall be Labeled at every entry/exit/termination/MDF etc.,	
<b>22.0</b>	Above are minimum specifications of the systems/components/devices. However, higher or better specifications or any additional modules / cards / components/devices /functionalities if any needed for the system, then the same shall be provisioned & integrated.	



### **S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

23	Cost of 1 <sup>st</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 03 calendar years OOPMW after successful SAT	1	LOT	
24	Cost of 2 <sup>nd</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 1 <sup>st</sup> year CAMC	1	LOT	
25	Cost of 3 <sup>rd</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 2 <sup>nd</sup> year CAMC	1	LOT	
26	Cost of 4 <sup>th</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 3 <sup>rd</sup> year CAMC	1	LOT	
27	Cost of 5 <sup>th</sup> calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement, service support etc. after completion of 4 <sup>th</sup> year CAMC	1	LOT	

**Note:** Above are minimum specifications of the systems/components/devices. However, higher or better specifications or any additional modules / cards / components/devices /functionalities if any needed for the system, then the same shall be provisioned & integrated.

(Authorized Signatory)

Date:

Name & Address of the Firm

\_\_\_\_\_

\_\_\_\_\_

Telephone & Fax Nos.

\_\_\_\_\_

Mobile

\_\_\_\_\_

E-Mail Address

\_\_\_\_\_

Seal

**Annexure XII**

**ANNEXURE “MSME-A”**

(If Firm is participating in this Tender under “MSE” unit then to be submitted in Non-Judicial Stamp Paper value of Rs.100/- and to be uploaded in Technical folder)

**Declaration (For MSE Units Only)**

I, \_\_\_\_\_ on behalf of M/S. \_\_\_\_\_ in the capacity of \_\_\_\_\_  
(Position) \_\_\_\_\_ hereby declare that

1. Our MSE Unit(s) is/are availing benefits extended by MSME, Government of India to Micro and Small Enterprises (MSEs) for the work of \_\_\_\_\_ invited vide Bid Number \_\_\_\_\_
2. Our MSE Unit(s) has/have not been awarded any work/ Supply under MSME benefit during the current financial year.

OR

Our MSE Unit(s) has/have been awarded work / supply for a total value of Rs.\_\_(Rupees\_\_only) under MSME benefits as on date and same work(s) /Supply is/are “In hand (Progress)/Incomplete” during the current financial year. Further we confirm that the value of work/supply is/are in hand (awarded under MSME benefits) during the financial year plus estimated cost of this tender has not crossed the “Monetary Limit” mentioned in NSIC Certificate.

3. Our firm is participating in this tender under “**MSE Unit**” or “**Open Bidder**”.

**Note: Strike out the conditions in (2) & (3) whichever is not applicable. Decision on any discrepancy in this “Declaration” shall be at the discretion of AAI and shall be final and binding.**

Signature with Company Seal

Attested by Notary public

**Power of Attorney Format for the Authorized Person(s)**

(Bidder shall submit irrevocable Power of Attorney on a Non-Judicial Stamp Paper of Rs.100/- signed by authorized signatory as per Memorandum of Articles authorizing the persons, who are signing this bid on behalf of the company)

**POWER OF ATTORNEY**

By this POWER OF ATTORNEY executed on \_\_\_\_\_, we \_\_\_\_\_, a Company incorporated under the provisions of Companies Act, 1956 having its Registered Office at \_\_\_\_\_ (hereinafter referred to as the 'Company') do hereby severally appoint, constitute and nominate, officials(s) of the Company, so long as they are in the employment of the Company (hereinafter referred to as the 'Attorneys') to sign agreement and documents with regard e-tender No.

\_\_\_\_\_ due on \_\_\_\_\_ received from Airports Authority of India, Integrated Operational Offices Building, New Airport Colony, Opposite Parsiwada, Sahar Road, Vile Parle (East) Mumbai - 400 099 for "\_\_\_\_\_ (name of work \_\_\_\_\_" and to do all other acts, deeds and things the said Attorneys may consider expedient to enforce and secure fulfillment of any such agreement in the name and on behalf of the Company.

AND THE COMPANY hereby agrees to ratify and confirm all acts, deeds and things the said Attorneys shall lawfully do by virtue of these authorities hereby conferred.

IN WITNESS WHEREOF, this deed has been signed and delivered on the day, month and year first above written by Mr. Secretary of Company/Authorized Signatory, duly authorized by the Board of Directors of the Company vide it's resolution passed in this regard.

**WITNESS**

1.

2.

**By order of the Board**

\_\_\_\_\_

**For**

**Company Secretary/Authorized Signatory**

**Attorney Signature of Mr. Attorney Signature of Mr. \_\_\_\_\_**

**(Attested) ( \_\_\_\_\_ )**

**Company Secretary/Authorized Signatory**



**Declaration-1**

**Declaration-1 by the Contractor/Bidder**

I / we, the undersigned do hereby declare that, I / we have never ever been blacklisted and / or there were no debarring actions against us for any default in Supply of material / equipments by the Airports Authority of India

In the event of any such information pertaining to the aforesaid matter found at any given point of time either during the course of the contract or at the bidding stage, my bid/contract shall be liable for truncation / cancellation / termination without any notice at the sole discretion of the purchaser.

Signature of Bidder	:	_____
Name	:	_____
Date	:	_____
Seal	:	_____
E-mail address	:	_____

**Declaration-2 by the Contractor/Bidder**

I/We hereby declare that none of the members or my/our relatives is relative of any employee of AAI and I/We also further declare that no Director/Employee of Airports Authority of India is/are a Director/Partner of my/Our firm/Company/ Partnership) Proprietor.

Signature of Bidder	:	_____
Name	:	_____
Date	:	_____
Seal	:	_____
E-mail address	:	_____

**Declaration-3 by the Contractor/Bidder**

I / we, the undersigned do hereby declare that, I / we have

Original Equipment Manufacturer (OEM)

**Or**

**Authorized representative of OEM**

*(PLEASE STRIKE OUT ANY ONE OF ABOVE IN BOLD LETTERS)*

For Supply of material / equipments to the Airports Authority of India as mention in tender. In the event of any such information pertaining to the aforesaid matter found at any given point of time either during the course of the contract or at the bidding stage, my bid/contract shall be liable for truncation / cancellation / termination without any notice at the sole discretion of the purchaser.

Signature of Bidder	:	_____
Name	:	_____
Date	:	_____
Seal	:	_____
E-mail address	:	_____

**Declaration-4 by The Contractor/Bidder**

I/We hereby declare that no part of the scope of work mentioned in tender shall be sublet or outsourced to any third party.

Signature of Bidder	:	_____
Name	:	_____
Date	:	_____
Seal	:	_____
E-mail address	:	_____

**Declaration-5 by The Contractor/Bidder**

I/We hereby declare that our company is registered for GSTN and compliant of GST provision.

Signature of Bidder	:	_____
Name	:	_____
Date	:	_____
Seal	:	_____
E-mail address	:	_____

**PRE-CONTRACT INTEGRITY PACT**

This Pact made this day of ..... between Airports Authority of India, a body corporate constituted by the Central Government under the Airports Authority of India Act, 1994 and having its Corporate Office at Rajiv Gandhi Bhawan, New Delhi, and offices at ..... in India, hereinafter called the Authority (which term shall unless excluded by or is repugnant to the context, be deemed to include its Chairman, or Member, Executive Directors, Airport Directors, officers, or any of them specified by the Chairman in this behalf, and shall also include its successors and assigns) of the one part

AND

..... represented by  
..... of the other part, hereinafter called the "Bidder/Contractor" (which term shall unless excluded by or is repugnant to the context be deemed to include its heirs, representatives, successors and assigns of the Bidder/Contractor)

WHEREAS the Authority intends to award, under laid down organizational procedures, tender/ contract for .....  
..... The Authority, while discharging its functions on business principles, values proper compliance with all relevant laws and regulations, and the principles of natural justice, ethics, equity, fairness and transparency in its relations with the Bidders/ Contractors.

WHEREAS the Authority is desirous to make its business mechanism more transparent, thus to ensure strict adherence of the aforesaid objectives/goals, the Authority hereby adopts the instrument developed by the renowned international non-governmental organization " Transparency International" ( T I ) headquartered in Berlin( Germany ). The Authority will appoint an Independent External Monitor ( IEM ) who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

AND WHEREAS the Bidder is submitting a tender to the Authority for .....  
..... in response to the NIT (Notice Inviting Tender) dated ..... Contractor is signing the contract for execution of .....

NOW, therefore,

To avoid all forms of corruption by following a system that is fair, transparent and free from any influence/prejudiced dealings prior to, during and subsequent to the currency of the contract to be entered into with a view to

Enabling the Authority to obtain the desired said stores/equipment/execution of works at a competitive price in conformity with the defined specifications by avoiding the high cost and the distortionary impact of corruption on public procurement, and

Enabling Authority to abstain from bribing or indulging in any corrupt practice in order to secure the contract by providing assurance to them that their competitors will also abstain from bribing and other corrupt practices and the Authority will commit to prevent corruption, in any form, by its officials by following transparent procedures.

The parties hereto hereby agree to enter into this Integrity Pact and agree as follows:

**1. Commitments of the Authority**

The Authority undertakes that no official of the Authority, connected directly or indirectly with the contract, will demand, take a promise for or accept, directly or through intermediaries, any bribe, consideration, gift, reward, favour or any material or immaterial benefit or any other advantage from the BIDDER, either for themselves or for any person, organization or third party related to the contract in exchange for an advantage in the bidding process, bid evaluation, contracting or implementation process related to the contract.

The Authority will, during the pre-contact stage, treat all BIDDERS alike, and will provide to all BIDDERS the same information and will not provide any such information to any particular BIDDER which could afford an advantage to that particular BIDDER in comparison to other BIDDERS.

All the officials of the Authority will report to the appropriate authority office any attempted or completed breaches of the above commitments as well as any substantial suspicion of such a breach.

2. In case any such preceding misconduct on the part of such official(s) is reported by the BIDDER to the Authority with full and verifiable facts and the same is prima facie found to be correct by the Authority, necessary disciplinary proceedings, or any other action as deemed fit, including criminal proceedings may be initiated by the Authority and such a person shall be debarred from further dealings related to the contract process. In such a case while an enquiry is being conducted by the Authority the proceedings under the contract would not be stalled.

3. **Commitments of Bidders/Contractor:** The Bidder/Contractor commits itself to take all measures necessary to prevent corrupt practice, unfair means and illegal activities during any stage of its bid or during any pre-contract or post-contract stage in order to secure the contract or in furtherance to secure it and in particular commit itself to the following: -

The Bidder/Contractor will not offer, directly or through intermediaries, any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Authority, connected directly or indirectly with the bidding process, or to any person, organization or third party related to the contract in exchange for any advantage in the bidding, evaluation, contracting and implementation of the contract.

The Bidder/Contractor further undertakes

- 3.1.1 That it has not given, offered or promised to give, directly or indirectly any bribe, gift, consideration, reward, favour, any material or immaterial benefit or other advantage, commission, fees, brokerage or inducement to any official of the Authority or otherwise in procuring the Contractor for bearing to do or having done any act in relation to the obtaining or execution of the contract or any other contract with the Authority for showing or for bearing to show favour or disfavour to any person in relation to the contract or any other contract with the Authority.
- 3.1.2 That it has not entered and will not enter with other bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specification, certifications, subsidiary contracts, submission or non-submission of bids or any actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 3.2 The Bidder/Contractor shall, when presenting his bid, disclose the name and address of agents and representatives and Indian BIDDERS shall disclose their foreign principals or associates.
- 3.3 The Bidder/Contractor shall when present his bid disclose any and all the payment she has made or, is committed to or intends to make to agents/brokers or any other intermediary, in connection with this bid/contract.
- 3.4 The Bidder/Contractor further confirms and declares to the Authority that the BIDDER is the original

manufacturer/integrator/ authorized government sponsored export entity of the stores and has not engaged any individual or firm or company whether Indian or foreign to intercede, facilitate or in any way to recommend to the Authority or any of its functionaries, whether officially or unofficially to the award of the contract to the BIDDER, nor has any amount been paid, promised or intended to be paid to any such individual, firm or company in respect of any such intercession, facilitation or recommendation.

- 3.5 The Bidder/Contractor, either while presenting the bid or during pre-contract negotiations or before signing the contract, shall disclose any payments he has made, is committed to or intends to make to officials of the Authority or their family members, agents, brokers or any other intermediaries in connection with the contract and the details of services agreed upon for such payments.
- 3.6 The Bidder/Contractor will not collude with other parties interested in the contract to impair the transparency, fairness and progress of the bidding process, bid evaluation, contracting and implementation of the contract.
- 3.7 The Bidder/Contractor will not accept any advantage in exchange for any corrupt practice, unfair means and illegal activities.
- 3.8 The Bidder / Contactor shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information provided by the Authority as part of the business relationship, regarding plans, technical proposals and business details, including information contained in any electronic data carrier. The Bidder / Contractor also undertakes to exercise due and adequate care lest any such information is divulged.
- 3.9 The Bidder/Contractor will inform to the Independent External Monitor, if
- 3.9.1 He receives demand for an illegal/undue payment/benefit.
- 3.9.2 He comes to know of any unethical or illegal payment/benefit.
- 3.9.3 He makes any payment to any Authority's associate (s)
- 3.10 **That a Person signing the IP shall not approach the Courts while representing the matters to IEMs and he/she will await their decision in the matter.**  
The Bidder/Contactor commits to refrain from giving any complaint directly or through any other manner without supporting it with full and verifiable facts.
- 3.11 The Bidder/Contactor shall not instigate or cause to instigate any third person to commit any of the actions mentioned above.
- 3.12 If the Bidder/Contractor or any employee of the Bidder/Contractor or any person acting on behalf of the Bidder/Contractor, either directly or indirectly, is a relative of any of the officers of the Authority, or alternatively, if any relative of an officer of the Authority has financial interest/stake in the Bidder's/Contractor's firm, the same shall be disclosed by the Bidder/Contractor at the time filing of tender. The term 'relative' for this purpose would be as defined in Section 6 of the Companies Act 1956.
- 3.13 The Bidder/Contractor shall not lend to or borrow any money from or enter into any monetary dealings or transactions, directly or indirectly, with any employee of the Authority.
- 3.14 That if the Bidder/ Contractor, during tender process or before the award of the contract or during execution of the contract/work has committed a transgression in violation of section 2 or in any other form such as to put his reliability or credibility as Bidder/Contractor into question, the Authority is entitled to disqualify him from the tender process or to terminate the contract for such reason and to debar the BIDDER from participating in future bidding processes.



**4. Previous Transgression**

- 4.1 The Bidder/Contractor declares that no previous transgression occurred in the last three years immediately before signing of this Integrity Pact, with any other company in any country in respect of any corrupt practices envisaged hereunder or with any Public Sector Enterprise in India or any Government Department in India that could justify Bidder's exclusion from the tender process.
- 4.2 The Bidder/Contractor agrees that if it makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason and he may be considered for debarment for future tender/contract processes.
- 4.3 That the Bidder/Contractor undertakes to get this Pact signed by the sub-contractor(s) and associate(s) whose value of the work contribution exceeds Rs.0.5Crores (Rupees zero point five Crores) and to submit the same to the Authority along-with the tender document/ contract before contract signing.
- 4.4 That sub-contractor(s)/associate(s) engaged by the Contractor, with the approval of the Authority after signing of the contract, and whose value of the work contribution exceeds Rs 0.5 Crores (Rupees Zero point five Crores) will be required to sign this Pact by the Contractor, and the same will be submitted to the Authority before doing/ performing any act/ function by such sub-contractor(s)/ associate(s) in relation to the contract/work.
- 4.5 That the Authority will disqualify from the tender process all Bidder(s) who do not sign this Pact or violate its provisions or fails to get this Pact signed in terms of section 4.3 or 4.4above.
- 4.6 That if the Contractor(s) does/ do not sign this Pact or violate its provisions or fails to get this Pact signed in terms of Section 4.3 or 4.4 above. Authority will terminate the contract and initiate appropriate action against such Contractor(s).

**5. Earnest Money, Security Deposit, Bank guarantee, Draft, Pay order or any other mode and its validity i/c Warranty Period, Performance guarantee/Bond.**

While submitting bid, the BIDDER shall deposit an EMD/SD/BG/DRAFT/PAY ORDER ETC I/C WARRANTY PERIOD, PG/BOND, VALIDITY ETC, which is as per terms and conditions and details given in NIT / tender documents sold to the Bidders.

**6. Sanctions for Violations/Disqualification from tender process and exclusion from future Contracts.**

- 6.1 Any breach of the aforesaid provisions by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER) shall entitle the Authority to take all or any one of the following actions, wherever required: -
- 6.1.1 To immediately call off the pre-contract negotiations without assigning any reason or giving any compensation to the BIDDER. However, the proceedings with the other BIDDER(s) would continue.
- 6.1.2 To immediately cancel the contract, if already signed, without giving any compensation to the BIDDER.
- 6.1.3 If the Authority has disqualified / debarred the Bidder from the tender process prior to the award under section 2 or 3 or 4, the Authority is entitled to forfeit the earnest money deposited/bid security.
- 6.1.4 To recover all sums already paid by the Authority, and in case of an Indian BIDDER with interest thereon at 2% higher than the prevailing Prime Lending Rate of State Bank of India, while in case of a BIDDER from a country other than India with interest thereon at 2% higher than the LIBOR. If any outstanding payment is due to the BIDDER from the Authority in connection with any other contract or any other stores, such outstanding payment could also be utilized to recover the aforesaid sum and interest.
- 6.1.5 To encash the advance bank guarantee and performance bond/ warranty bond, if furnished by the BIDDER, in

order to recover the payments, already made by the BUYER, along with interest.

- 6.1.6 To cancel all or any other Contracts with the BIDDER. The BIDDER shall be liable to pay compensation for any loss or damage to the Authority resulting from such cancellation/rescission and the Authority shall be entitled to deduct the amount so payable from the money(s) due to the BIDDER.
- 6.1.7 To debar the BIDDER from participating in future bidding processes for a minimum period of three years, which may be further extended at the discretion of the Authority.
- 6.1.8 To recover all sums paid in violation of this Pact by BIDDER(s) to any middleman or agent or broker with a view to securing the contract.
- 6.1.9 In case where irrevocable Letters of Credit have been received in respect of any contract signed by the Authority with the BIDDER, the same shall not be opened.
- 6.1.10 Forfeiture of Performance Bond in case of a decision by the BUYER to forfeit the same without assigning any reason for imposing sanction for violation of this Pact.
- 6.1.11 That if the Authority have terminated the contract under section 2 or 3 or 4 or if the Authority is entitled to terminate the contract under section 2 or 3 or 4, the Authority shall be entitled to demand and recover from the contractor damages equivalent to 5% of the contract value or the amount equivalent to security deposit or performance bank guarantee (PBG), whichever is higher.
- 6.1.12 That the Bidder / Contractor agrees and undertakes to pay the said amount without protest or demur subject only to condition that if the Bidder/Contractor can prove and establish to the satisfaction of the Authority that the disqualification / debarment of the bidder from the tender process or the termination of the contract after award of the contract has caused no damage to the Authority.
- 6.2 The Authority will be entitled to take all or any of the actions mentioned at para 6.1(i) to (xii) of this Pact also on the Commission by the BIDDER or any one employed by it or acting on its behalf (whether with or without the knowledge of the BIDDER), of an offence as defined in Chapter IX of the Indian Penal code, 1860 or Prevention of Corruption Act, 1988 or any other statute enacted for prevention of corruption.
- 6.3 That if the Bidder/Contractor applies to the Authority for premature revocation of the debarment and proves to the satisfaction of the Authority that he has installed a suitable and effective corruption prevention system and also restored/recouped the damage, if any, caused by him, the Authority may, if thinks fit, revoke the debarment prematurely considering the facts and circumstances of the case, and the documents/evidence adduced by the Bidder/Contractor for first time default.
- 6.4 That a transgression is considered to have occurred if the Authority is fully satisfied with the available documents and evidence submitted along with Independent External Monitor's recommendations/ suggestions that no reasonable doubt is possible in the matter.
- 6.5 The decision of the Authority to the effect that a breach of the provisions of this Pact has been committed by the BIDDER shall be final and conclusive on the BIDDER. However, the BIDDER can approach the Independent External Monitor(s) appointed for the purpose of this Pact.

**Allegations against Bidders/Contractors/ Sub-Contractors/ Associates:** That if the Authority receives any information of conduct of a Bidder/ Contractor or Sub-Contractor or of an employee or a representative or Associates of a Bidder, Contractor or Sub-Contractor which constitute corruption, or if the Authority has substantive suspicion in this regard, the Authority will inform the Vigilance Department for appropriate action.

## **7. Independent External Monitor(s)**

- 7.1 That the Authority has appointed competent and credible Independent External Monitor(s) for this Pact.

- 7.2 The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Pact. He will also enquire into any complaint alleging transgression of any provision of this Pact made by the Bidder, Contractor or Authority.
- 7.3 That the Monitor is not subject to any instructions by the representatives of the parties and would perform his functions neutrally and independently. He will report to the Chairperson of the Board of the Authority.
- 7.4 That the Bidder / Contractor accepts that the Monitor has the right to access without restriction to all project documentation of the Authority including that provided by the Bidder/Contractor. The Bidder/Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation including minutes of meeting. The same is applicable to Sub – Contractors and Associates. The Monitor is under obligation to treat the information and documents of the Authority and Bidder/ Contractor/ Sub-Contractors/ Associates with confidentiality.
- 7.5 That as soon as the Monitor notices, or believes to notice, a violation of this Pact, he will so inform the management of the Authority and request the management to discontinue or heal the violation, or to take other relevant action. The Monitor can in this regard submit his recommendations/suggestions. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- 7.6 That the Authority will provide to the Monitor sufficient information about all meetings among the parties related to the project provided such meetings could have an impact on the contractual relations between the Authority and the Contractor / Bidder. The parties offer to the Monitor the option to participate in such meetings.
- 7.7 That the Monitor will submit a written report to the Chairperson of the Board of the Authority within 2 weeks from the date of reference or intimation to him by the Authority and, should the occasion arise, submit proposals for correcting problematic situations.
- 7.8 That if the Monitor has reported to the Chairperson of the Board a substantiated suspicion of an offence under relevant Anti-Corruption Laws of India and the Chairperson has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Department, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 7.9 The word 'Monitor' would include singular and plural.

## **8. Facilitation of Investigation.**

- 8.1 In case of any allegation of violation of any provisions of this Pact or payment of commission, the Authority or its agencies shall entitle to examine all the documents including the Books of Accounts of the BIDDER and the BIDDER shall provide necessary information and documents in English and shall extend all possible help for the purpose of such Examination.

## **9. Law and Place of Jurisdiction.**

- 9.1 That this Pact is subject to Indian Law. The place of performance and jurisdiction is the Corporate Headquarter/the Regional Headquarter/office of the Authority, as applicable.

## **10. Other Legal Actions**

- 10.1 That the changes and supplements as well as termination notices need to be made in writing.
- 10.2 That if the Bidder / Contractor is a partnership or a consortium, this Pact must be signed by all the partners and consortium members or their authorized representatives.

**11. Pact duration (Validity)**

- 11.1 That this Pact comes into force when both the parties have signed it. It expires for the Contractor 12 months after the final payment under the respective contract, and for all other Bidders 3 months after the contract is awarded.
- 11.2 That if any claim is made / lodged during this period, the same shall be binding and continue to be valid despite the lapse of this Pact as specified herein before, unless it is discharged/determined by Chairman of the Authority.
- 11.3 That should one or several provisions of this Pact turn out to be invalid; the remainder of this Pact shall remain valid. In this case, the parties will strive to come to an agreement to their original intentions.

**12. Company Code of Conduct**

- 12.1 Bidders are also advised to have a company code of conduct (clearly rejecting the use of bribes and other unethical behavior) and a compliance program for the implementation of the code of conduct throughout the company.

13. The parties hereby sign this Integrity Pact at \_\_\_\_\_ on \_\_\_\_\_

<b>Buyer</b>  Name of the Officer Designation Deptt. /Ministry/PSU Witness 1. _____ 2. _____	<b>BIDDER</b>  CHIEF EXECUTIVE OFFICER    <b>Witness</b>  1. _____ 2. _____
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**Annexure**

**Validate**

**Print**

**Help**

**Item Rate BoQ**

**Tender Inviting Authority: General Manager (CNS), Western Region, Mumbai**

**Name of Work: S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

**Contract No:**

<b>Name of the Bidder/ Bidding Firm / Company:</b>							
<p align="center"><b><u>PRICE SCHEDULE</u></b></p> <p align="center"><b>(This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only)</b></p>							
<b>NUMBER #</b>	<b>TEXT #</b>	<b>NUMBER #</b>	<b>TEXT #</b>	<b>NUMBER #</b>	<b>NUMBER</b>	<b>NUMBER #</b>	<b>TEXT #</b>
<b>Sl. No.</b>	<b>Item Description</b>	<b>Quantity</b>	<b>Units</b>	<b>BASIC RATE in Figures To be entered by the Bidder Rs. P</b>	<b>GST in %</b>	<b>TOTAL AMOUNT Exclusive GST Rs. P</b>	<b>TOTAL AMOUNT In Words</b>
<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>13</b>	<b>14</b>	<b>53</b>	<b>55</b>
1	Core switches with accessories	2	LOT			0.00	INR Zero Only

### S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

2	Distribution/access switches with accessories	12	LOT			0.00	INR Zero Only
3	NAC/AAA server with accessories	1	LOT			0.00	INR Zero Only
4	NMS with accessories	1	LOT			0.00	INR Zero Only
5	Firewall with accessories	1	LOT			0.00	INR Zero Only
6	NTP server with accessories	2	LOT			0.00	INR Zero Only
7	NTP clock 100 MM with accessories	32	LOT			0.00	INR Zero Only
8	Server hardware with accessories	1	LOT			0.00	INR Zero Only
9	Work station with accessories	1	LOT			0.00	INR Zero Only
10	Administrative Laptop with accessories	1	LOT			0.00	INR Zero Only
11	8 port KVM switch with 15" monitor, KB and track ball with all accessories	2	LOT			0.00	INR Zero Only
12	LC-LC type 50/125µM OM4 multi-mode fibre patch cords	64	NOS			0.00	INR Zero Only
13	24 port CAT-6A U/FTP modular patch panel, fully loaded with accessories	16	LOT			0.00	INR Zero Only

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

14	CAT-6A U/FTP LSZH patch cord, 5 meters	200	NOS			0.00	INR Zero Only
15	CAT-6A cable, U/FTP, 4P, LSZH, 500 MHz box 500 meter	10	ROLLS			0.00	INR Zero Only
16	CAT 6 RJ45 connector for CAT U/UTP cable	100	NOS			0.00	INR Zero Only
17	Single RJ45 port CAT 6A U/FTP fully loaded gang wall plate with surface mount back box	50	LOT			0.00	INR Zero Only
18	SPD for RJ 45	50	NOS			0.00	INR Zero Only
19	19" Rack 42 RU 800X1000MM	2	LOT			0.00	INR Zero Only
20	19" Rack 9 RU wall mount rack	5	LOT			0.00	INR Zero Only
21	Installation accessories: network tool kit containing LAN cable tester, data cable crimping tool for RJ 45, RJ 11, cable cutter and stripper, label printer and installation accessories etc.:	1	LOT			0.00	INR Zero Only
22	Installation material	1	LOT			0.00	INR Zero Only
23	Cost of 1st calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement service support etc. after completion of 03 calendar years OOPMW after successful SAT	1	LOT			0.00	INR Zero Only
24	Cost of 2nd calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement service support etc. after completion of 1 <sup>st</sup> year CAMC	1	LOT			0.00	INR Zero Only

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

25	Cost of 3rd calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement service support etc. after completion of 2 <sup>nd</sup> year CAMC	1	LOT			0.00	INR Zero Only
26	Cost of 4th calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement service support etc. after completion of 3rd year CAMC	1	LOT			0.00	INR Zero Only
27	Cost of 5th calendar year Onsite Operational Performance Comprehensive Annual Maintenance (OOPCAM), inclusive of all spares, components, consumables & other accessories, repair/replacement service support etc. after completion of 4 <sup>th</sup> year CAMC	1	LOT			0.00	INR Zero Only
<b>Total in Figures</b>						<b>0.00</b>	INR Zero Only
<b>Quoted Rate in Words</b>		<b>INR Zero Only</b>					

**Note 1:** Lowest bidder (L1) shall be finalized on the basis of basic cost to AAI price bid shall be full in all respect. Partial bid will not be considered for evaluation.

**Note: 2:** Rate quoted shall be inclusive of applicable taxes including Transportation and Insurance etc. but exclusive of GST.

Form C & D for concessional duty shall not be acceptable by AAI for exemption or reduction in Govt. Duties. No extra shall be payable.



**CHECK LIST****Check list for submission of documents and formats-**

This check list is given for the bidders' self-evaluation for verifying whether all the necessary documents have been enclosed or not in respective envelope in the required format. **Exact details of requirements need to be seen on the tender documents.**

<b>Documents to be submitted on or before the date mentioned in the CRITICAL DATES</b>			
<b>ENVELOPE – I (Pre-qual./Technical)</b>			
<b>SN</b>	<b>Type of document</b>	<b>File Format</b>	<b>Uploaded in e-portal (Yes / No)</b>
1	Copy of Tender Fee /EMD Paid online	.pdf	
2	a) NIT Section-I b) Instructions to Bidders Section-II c) General Terms and conditions Section III d) Special Conditions of Contract Section IV	.pdf	
3	Pre-Contract Integrity Pact	.pdf	
4	If tender fee exemption is sought, necessary certificates from appropriate authorities.	.pdf	
5	Copy of the PAN card.	.pdf	
6	Copy of the GSTN Registration Certificate.	.pdf	
7	Proof of the work executed	.pdf	
8	Proof of satisfactory service for the work executed	.pdf	
9	TDS certificate in case of experience in Private Sector	.pdf	
10	Proof of financial turnover, copy of audited balance sheet by CA having UDIN	.pdf	
11	Proof of OEM or Copy of Authorized Representative certificate issued by OEM.	.pdf	
12	Scanned Copy of EMD DD	.pdf	
13	If EMD exemption is sought, necessary certificates from appropriate authorities.	.pdf	
14	<b>Duly signed Unconditional acceptance letter as per Annexure-IV</b>	.pdf	

**S.I.T.C. of NTP Server and GPS Clock at Mopa Airport**

15	Compliance statement as per Annexure-XI	.pdf	
16	Bill of Material & Port Consignee as per Annexure- VIII	.pdf	
17	Technical Brochure, User operational and maintenance manual etc. for offered product,	.pdf	
18	Declarations (Annexure XIV to XVIII)	.pdf	
<b>ENVELOPE – II (Financial)</b>			
<b>SN</b>	<b>Type of document</b>	<b>File Format</b>	<b>Uploaded in e-portal (Yes / No)</b>
1	Item rate BOQ	.xls	

### S.I.T.C. of NTP Server and GPS Clock at Mopa Airport

