Notice Inviting Quotation (E-Procurement mode)
कोटेशन को आमंत्रित करने की सूचना (इ-प्रोक्योर्मेंट मोड)

INDIAN INSTITUTE OF TECHNOLOGY DELHI
भारतीय प्रौद्योगिकी संस्थान दिल्ली
HAUZ KHAS, NEW DELHI-110016
हौज ख़ास, नई दिल्ली -110016

Dated/ दिनांक **: 29/07/2021**

Open Tender Notice No. / खुला प्रस्ताव निविदा सूचना नंबर: IITD/BPHY(SP-3560)/2021

Indian Institute of Technology Delhi is in the process of purchasing following item(s) as per details as given as under.
इंडियन इंस्टीट्यूट ऑफ टेक्नोलॉजी दिल्ली निम्नलिखित मदों की खरीद की प्रक्रिया में है।

Details of the item आइटम का विवरण	**HPC cluster for dept. of Physics, IIT Delhi**
Earnest Money Deposit to be submitted बयाना जमा करने के लिए जमा राशि	**NIL.** However, bidders are required to submit 'Bid Security Undertaking' in lieu of EMD (Annexure-IX)
Warranty वारंटी अवधि	**3 Years/3** साल
Performance security निष्पादन सुरक्षा	**3% of item value**
Delivery Schedule	*08 WEEKS*
Mandatory Minimum Local Content	***1) 50% for Class 1 Supplier*** ***2) 20% for Class II Supplier***
Margin of Purchase Preference for Local Content	***20% (Pl. refer to the DPIIT Order mentioned at T&C No.45)***

Tender Documents may be downloaded from Central Public Procurement Portal http://eprocure.gov.in/eprocure/app . Aspiring Bidders who have not enrolled / registered in e-procurement should enroll / register before participating through the website http://eprocure.gov.in/eprocure/app . The portal enrolment is free of cost. Bidders are advised to go through instructions provided at 'Instructions for online Bid Submission'.

निविदा दस्तावेज केन्द्रीय सार्वजनिक खरीद पोर्टल http://eprocure.gov.in/eprocure/app से डाउनलोड हो सकते हैं ई-प्रोक्योरमेंट में पंजीकृत नहीं होने वाले इच्छुक बोलीदाताओं को वेबसाइट http://eprocure.gov.in/eprocure/app के माध्यम से भाग लेने से पहले पंजीकरण करना चाहिए। पोर्टल नामांकन मुफ्त है बोलीदाताओं को सलाह दी जाती है कि 'ऑनलाइन बोली के लिए निर्देश' पर दिए गए निर्देशों के माध्यम से जाने की सलाह दी जाए।

Tenderers can access tender documents on the website (For searching in the NIC site, kindly go to Tender Search option and type 'IIT'. Thereafter, Click on "GO" button to view all IIT Delhi tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website http://eprocure.gov.in/eprocure/app as per the schedule given in the next page.

निविदाकर्ता वेबसाइट पर निविदा दस्तावेज का उपयोग कर सकते हैं (एनआईसी साइट में खोज के लिए, कृपया निविदा खोज विकल्प और 'आईआईटी' टाइप करें। उसके बाद, सभी आईआईटी दिल्ली निविदाओं को देखने के लिए "गो" बटन पर क्लिक करें) उपयुक्त निविदा का चयन करें और उन्हें सभी प्रासंगिक सूचनाओं से भरें और वेबसाइट पर http://eprocure.gov.in/eprocure/app पर पूरा निविदा दस्तावेज ऑनलाइन जमा करें। अगले पृष्ठ में दिए गए कार्यक्रम के अनुसारNo manual bids will be accepted. All quotation (both Technical and Financial should be submitted in the E-procurement portal).

कोई मैन्युअल बोली स्वीकार नहीं की जाएगी। सभी कोटेशन (तकनीकी और वित्तीय दोनों को ई-प्रोक्योरमेंट पोर्टल में जमा करना चाहिए)

SCHEDULE

Name of Organization	Indian Institute of Technology Delhi
Tender Type (Open/Limited/EOI/Auction/Single/Global)	Open
Tender Category (Services/Goods/works)	Goods
Type/Form of Contract (Work/Supply/ Auction/ Service/ Buy/ Empanelment/ Sell)	Buy
Product Category (Civil Works/Electrical Works/Fleet Management/ Computer Systems)	Others
Source of Fund (Institute/Project)	IoE funds for dept. of physics
Currency	**Indian Rupee (INR)**
Date of Issue/Publishing	29/07/2021 (15:00 Hrs)
Document Download/Sale Start Date	29/07/2021 (15:00 Hrs)
Document Download/Sale End Date	19/08/2021 (15:00 Hrs)
Date for Pre-Bid Conference	---
Venue of Pre-Bid Conference	---
Last Date and Time for Uploading of Bids	19/08/2021 (15:00 Hrs)
Date and Time of Opening of Technical Bids	20/08/2021 (15:00 Hrs)
Tender Fee (If any)	Rs.___NIL_____/- (For Tender Fee) (To be paid through RTGS/NEFT. IIT Delhi Bank details are as under: Name of the Bank A/C : IITD Revenue Account SBI A/C No. : 10773572622 Name of the Bank : State Bank of India, IIT Delhi, Hauz Khas, New Delhi-110016 IFSC Code : SBIN0001077 MICR Code : 110002156 Swift No. : SBININBB547 (This is mandatory that UTR Number is provided in the on-line quotation/bid. (Kindly refer to the UTR Column of the Declaration Sheet at Annexure-II)
No. of Covers (1/2/3/4)	02
Bid Validity days (180/120/90/60/30)	60 days (From last date of opening of tender)
Address for Communication	Prof. Saswata Bhattacharya, Associate Professor Department of Physics, Indian Institute of Technology Delhi Hauz Khas, New Delhi 110 016 Office: MS 519; Lab: MS 543
Contact No.	+91-11-2659 1359
Email Address	saswata@physics.iitd.ac.in

Chairman Purchase Committee
(Buyer Member)

Instructions for Online Bid Submission/ ऑनलाइन बोली (बिड) के लिए निर्देश:

As per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal (URL:http://eprocure.gov.in/eprocure/app). The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

व्यय विभाग के निर्देशों के अनुसार, यह निविदा दस्तावेज केंद्रीय सार्वजनिक प्रापण पोर्टल (यूआरएल: http://eprocure.gov.in/eprocure/app) पर प्रकाशित किया गया है। बोलीदाताओं को मान्य डिजिटल हस्ताक्षर प्रमाण पत्र का उपयोग करते हुए सीपीपी पोर्टल पर इलेक्ट्रॉनिक रूप से अपनी बोलियों की सॉफ्ट प्रतियां जमा करना आवश्यक है। सीपीपी पोर्टल पर पंजीकरण करने के लिए निविदाकर्ताओं की सहायता करने के लिए नीचे दिए गए निर्देशों का मतलब है, सीपीपी पोर्टल पर आवश्यकताओं के अनुसार अपनी बोलियां तैयार करें और अपनी बोलियां ऑनलाइन जमा करें।

More information useful for submitting online bids on the CPP Portal may be obtained at:

अधिक जानकारी सीपीपी पोर्टल पर ऑनलाइन बोलियां जमा करने के लिए उपयोगी हो सकती है:

http://eprocure.gov.in/eprocure/app

REGISTRATION

1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL:http://eprocure.gov.in/eprocure/app) by clicking on the link "Click here to Enroll". Enrolment on the CPP Portal is free of charge.

   बोलीदाताओं को "नामांकन के लिए यहां क्लिक करें" लिंक पर क्लिक करके सेंट्रल पब्लिक प्रोक्युरमेंट पोर्टल (यूआरएल: http://eprocure.gov.in/eprocure/app) के ई-प्रोक्योरमेंट मॉड्यूल पर भर्ती करना आवश्यक है। सीपीपी पोर्टल पर नामांकन नि: शुल्क है

2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.

   नामांकन प्रक्रिया के भाग के रूप में, बोलीदाताओं को अपने खाते के लिए एक अद्वितीय उपयोगकर्ता नाम चुनना होगा और एक पासवर्ड प्रदान करना होगा।

3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.

   बोलीदाताओं को सलाह दी जाती है कि पंजीकरण प्रक्रिया के भाग के रूप में अपना वैध ईमेल पता और मोबाइल नंबर पंजीकृत करें। इन का उपयोग सीपीपी पोर्टल से किसी भी संचार के लिए किया जाएगा।

4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.), with their profile.

   नामांकन पर, बोलीदाताओं को सीसीए इंडिया द्वारा मान्यता प्राप्त किसी प्रमाणन प्राधिकरण द्वारा जारी किए गए अपने मान्य डिजिटल हस्ताक्षर प्रमाण पत्र (कक्षा द्वितीय या कक्षा III प्रमाण पत्र के साथ महत्वपूर्ण उपयोग पर हस्ताक्षर करने) की आवश्यकता होगी (जैसे सिफी / टीसीएस / एनकोड / ई-मुद्रा आदि) , उनके प्रोफाइल के साथ

5) 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 DSCs to others which may lead to misuse.

केवल एक मान्य डीएससी एक बोलीदाता द्वारा पंजीकृत होना चाहिए। कृपया ध्यान दें कि निविदाकर्ता यह सुनिश्चित करने के लिए ज़िम्मेदार हैं कि वे अपने डीएससी को दूसरों को उधार नहीं देते हैं जिससे दुरुपयोग हो सकता है।

6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.

बोलीदाता फिर अपने यूजर आईडी / पासवर्ड और डीएससी / ईटीकेन के पासवर्ड को दर्ज करके सुरक्षित लॉग-इन के माध्यम से साइट पर लॉग ऑन करता है।

SEARCHING FOR TENDER DOCUMENTS/ निविदा दस्तावेजों के लिए खोजना

1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.

सीपीपी पोर्टल में निर्मित विभिन्न खोज विकल्प हैं, ताकि बोलीदाताओं को कई मापदंडों से सक्रिय निविदाएं खोज सकें। इन मापदंडों में निविदा आईडी, संगठन का नाम, स्थान, तिथि, मूल्य आदि शामिल हो सकते हैं। निविदाओं के लिए उन्नत खोज का एक विकल्प भी है, जिसमें बोलीदाता कई नामों को जोड़ सकते हैं जैसे संगठन का नाम, अनुबंध का स्थान, स्थान, सीपीपी पोर्टल पर प्रकाशित निविदा की खोज के लिए तारीख, अन्य कीवर्ड आदि।

2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.

बोलीदाताओं ने एक बार निविदाएं चुनी हैं जिसमें वे रुचि रखते हैं, उसका वे आवश्यक दस्तावेज / निविदा कार्यक्रम डाउनलोड कर सकते हैं। ये निविदाएं 'मेरी निविदाओं' फ़ोल्डर में ले जाई जा सकती हैं। इससे सीपीपी पोर्टल को बोलीदाताओं को एसएमएस / ई-मेल के माध्यम से सूचित किया जा सकता है, यदि निविदा दस्तावेज में कोई शुद्धि जारी कि गई है।

3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

बोलीदाता को प्रत्येक निविदा को निर्दिष्ट अद्वितीय निविदा आईडी का नोट बनाना चाहिए, अगर वे हेल्पडेस्क से कोई स्पष्टीकरण / सहायता प्राप्त करना चाहते हैं।

PREPARATION OF BIDS / बोली (बिड) की तैयारी

1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.

बोलीदाता को अपनी बोलियां जमा करने से पहले निविदा दस्तावेज पर प्रकाशित किसी भी शुद्धि को ध्यान में रखना चाहिए।

2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

कृपया बोली के भाग के रूप में जमा किए जाने वाले दस्तावेजों को समझने के लिए निविदा विज्ञापन और निविदा दस्तावेज ध्यान से देखें। कृपया उन अंकों की संख्या पर ध्यान दें जिन में बोली दस्तावेज जमा करना है, दस्तावेजों की संख्या - जिसमें प्रत्येक दस्तावेज के नाम और सामग्री शामिल हैं, जिन्हें प्रस्तुत करने की आवश्यकता है। इनमें से कोई भी विचलन बोली को अस्वीकार कर सकता है।

3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option.

बोलीदाता, अग्रिम में, निविदा दस्तावेज / अनुसूची में बताए अनुसार प्रस्तुत करने के लिए बोली दस्तावेज तैयार करना चाहिए और आम तौर पर, वे पीडीएफ / एक्सएलएस / आरएआर / डीडब्ल्यूएफ स्वरूपों में हो सकते हैं। बोली दस्तावेजों को 100 डीपीआई के साथ काले और सफेद विकल्प स्कैन किया जा सकता है।

4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

मानक दस्तावेजों के एक ही सेट को अपलोड करने के लिए आवश्यक समय और प्रयास से बचने के लिए जो प्रत्येक बोली के भाग के रूप में जमा करने के लिए आवश्यक हैं, ऐसे मानक दस्तावेज अपलोड करने का प्रावधान (जैसे पैन कार्ड कॉपी, वार्षिक रिपोर्ट, लेखा परीक्षक प्रमाण पत्र आदि)) बोलीदाताओं को प्रदान किया गया है। ऐसे दस्तावेजों को अपलोड करने के लिए बोलीकर्ता उनके लिए उपलब्ध "मेरा स्पेस" क्षेत्र का उपयोग कर सकते हैं। बोली जमा करते समय ये दस्तावेज़ सीधे "मेरा स्पेस" क्षेत्र से जमा किए जा सकते हैं, और उन्हें बार-बार अपलोड करने की ज़रूरत नहीं है इससे बोली जमा प्रक्रिया के लिए आवश्यक समय में कमी आएगी।

SUBMISSION OF BIDS/ बोली (बिड) का जमा करना

1) Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

बोलीदाता को बोली प्रस्तुति के लिए अच्छी तरह से साइट पर लॉग इन करना चाहिए ताकि वह समय पर बोली अपलोड कर सके या फिर बोली प्रस्तुत करने के समय से पहले। अन्य मुद्दों के कारण किसी भी देरी के लिए बोलीदाता जिम्मेदार होगा।

2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

बोलीदाता को निविदा दस्तावेज में दर्शाए अनुसार एक-एक करके आवश्यक बोली दस्तावेजों को डिजिटल हस्ताक्षर और अपलोड करना होगा।

3) Bidder has to select the payment option as "on-line" to pay the tender fee as applicable and enter details of the instrument. Whenever, Tender fees is sought, bidders need to pay the tender fee separately on-line through RTGS (Refer to Schedule, Page No.2).

बोलीदाता को निविदा शुल्क / ईएमडी को भुगतान के लिए "ऑन लाइन" के रूप में भुगतान विकल्प चुनना होगा और उपकरण का विवरण दर्ज करना होगा। जब भी, ईएमडी / निविदा शुल्क की मांग की जाती है, बोलीदाताओं को टेंडर शुल्क और ईएमडी अलग-अलग आरटीजीएस के माध्यम से ऑन लाइन पर भुगतान करने की आवश्यकता होती है (अनुसूची, पेज नं .2 देखें)।

4) A standard BoQ format has been provided with the tender document to be filled by all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the BoQ file, open it and complete the white colored (unprotected) cells 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 filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.

एक मानक BoQ प्रारूप को सभी बोलीदाताओं द्वारा भरने के लिए निविदा दस्तावेज प्रदान किया गया है। बोलीदाताओं को इस बात का ध्यान रखना चाहिए कि उन्हें आवश्यक प्रारूप में अपनी वित्तीय बोली जमा करनी चाहिए और कोई

अन्य प्रारूप स्वीकार्य नहीं है। बोलीकर्ताओं को BoQ फाइल को डाउनलोड करने, इसे खोलने और अपने संबंधित वित्तीय उद्धरण और अन्य विवरण (जैसे बोलीदाता का नाम) के साथ सफेद रंगीन (असुरक्षित) कोशिकाओं को पूरा करना आवश्यक है। कोई भी अन्य कक्ष नहीं बदला जाना चाहिए। एक बार विवरण पूरा हो जाने पर, बोलीदाता को इसे सहेजना होगा और इसे ऑनलाइन जमा करना होगा, बिना फ़ाइल नाम बदलना। यदि BOQ फ़ाइल को बोलीदाता द्वारा संशोधित किया गया है, तो बोली को खारिज कर दिया जाएगा।

5) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

   सर्वर का समय (जो बोलीदाताओं के डैशबोर्ड पर प्रदर्शित होता है) बोलीदाताओं द्वारा बोलियों को खोलने के लिए समय सीमा को संदर्भित करने के लिए मानक समय के रूप में माना जाएगा। बोलीदाताओं को खोलना आदि। बोलीदाताओं को बोली प्रस्तुत करने के दौरान इस समय का पालन करना चाहिए।

6) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done.

   बोलीदाताओं द्वारा प्रस्तुत सभी दस्तावेज पीकेआई एन्क्रिप्शन तकनीकों का उपयोग करके एन्क्रिप्ट किया जाएगा जिससे डेटा की गोपनीयता सुनिश्चित हो सके। दर्ज किए गए डेटा को अनधिकृत व्यक्तियों द्वारा बोली खोलने के समय तक नहीं देखा जा सकता है। बोलियों की गोपनीयता को सुरक्षित सॉकेट लेयर 128 बिट एन्क्रिप्शन तकनीक का उपयोग कर रखा जाता है। संवेदनशील क्षेत्रों का डेटा संग्रहण एन्क्रिप्शन किया जाता है।

7) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

   अपलोड किए गए निविदा दस्तावेज केवल अधिकृत बोलीदाता द्वारा निविदा खोलने के बाद ही पठनीय हो सकते हैं।

8) Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

   बोलियों के सफल और समय पर जमा होने पर, पोर्टल एक सफल बोली प्रस्तुत करने का संदेश देगा और एक बोली सारांश बोली संख्या के साथ प्रदर्शित किया जाएगा। और अन्य सभी प्रासंगिक विवरणों के साथ बोली प्रस्तुत करने की तारीख और समय।

9) Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

   कृपया अनुपालन पत्रक की एक पीडीएफ फाइल में सभी प्रासंगिक दस्तावेजों के स्कैन किए गए पीडीएफ़ को जोड़ दें।

ASSISTANCE TO BIDDERS / बोलीदाताओं को सहायता

1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

   निविदा दस्तावेज से संबंधित कोई भी प्रश्न और इसमें निहित नियमों और शर्तों को निविदा आमंत्रण प्राधिकरण को निविदा के लिए या निविदा में वर्णित प्रासंगिक संपर्क व्यक्ति से संबोधित किया जाना चाहिए।

2) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 233 7315.

   ऑनलाइन बोली प्रस्तुत करने या सामान्य में सीपीपी पोर्टल से संबंधित प्रश्नों की प्रक्रिया से संबंधित कोई भी प्रश्न 24x7 सीपीपी पोर्टल हैल्पडेस्क पर निर्देशित किया जा सकता है। हेल्पडेस्क के लिए संपर्क संख्या 1800 233 7315 है

General Instructions to the Bidders / बोलीदाताओं के लिए सामान्य निर्देश

1) The tenders will be received online through portal http://eprocure.gov.in/eprocure/app . In the Technical Bids, the bidders are required to upload all the documents in .pdf format.
निविदाएं पोर्टल http://eprocure.gov.in/eprocure/app के माध्यम से ऑनलाइन प्राप्त होंगी तकनीकी बोलियों में, बोलीदाताओं को सभी दस्तावेजों को। पीडीएफ प्रारूप में अपलोड करना होगा।

2) Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through https://eprocure.gov.in/eprocure/app. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site https://eprocure.gov.in/eprocure/app under the link "Information about DSC".
कंपनी के नाम में स्मार्ट कार्ड / ई-टोकन के रूप में मान्य क्लास II / III डिजिटल हस्ताक्षर प्रमाण पत्र (डीएससी) के पंजीकरण के लिए एक शर्त है और https://eprocure.gov.in/eprocure/ के माध्यम से बोली प्रस्तुत करने की गतिविधियों में भाग ले सकते है। डिजिटल हस्ताक्षर प्रमाण पत्र अधिकृत प्रमाणित एजेंसियों से प्राप्त की जा सकती है, जिनमें से जानकारी "डीएससी के बारे में सूचना" लिंक के तहत वेब साइट https://eprocure.gov.in/eprocure/app पर उपलब्ध है।

3) Tenderer are advised to follow the instructions provided in the 'Instructions to the Tenderer for the e-submission of the bids online through the Central Public Procurement Portal for e Procurement at https://eprocure.gov.in/eprocure/app.
निविदाकर्ता को सलाह दी जाती है कि वे निविदाकार को निर्देश दिए गए हों ताकि ई-प्रोक्योरमेंट के लिए सेंट्रल पब्लिक प्रोकॉर्ममेंट पोर्टल के जरिए https://eprocure.gov.in/eprocure/app पर ऑनलाइन निविदाएं जमा कर सकें।

Physics Department
Indian Institute of Technology
Hauz Khas, New Delhi-110 016

NOTICE INVITING QUOTATIONS

Subject : <Purchase of HPC cluster for dept. of Physics, IIT Delhi

Invitation for Tender Offers

Indian Institute of Technology Delhi invites online Bids (Technical bid and Commercial bid) from eligible and experienced OEM (Original Equipment Manufacturer) OR OEM Authorized Dealer for <**supply, installation & integration of HPC cluster for dept. of Physics, IIT Delhi** > with (warranty period as stated at page #1 of this tender) on site comprehensive warranty from the date of receipt of the material as per terms & conditions specified in the tender document, which is available on CPP Portal http://eprocure.gov.in/eprocure/app

TECHNICAL SPECIFICATION:

Sl. No.	**Technical Specifications for Master Node / Login Node Qty 02**
1	**Specifications Form Factor/Height:** 1U rack server
2	**Processors:** 2 × Intel Xeon Gold 5320T 20C 150W 2.3GHz Processor
3	**Memory:** 24x DIMM slots, should support Intel® Optane™ DC Persistent Memory; 2933 MHz/ 3200MHz TruDDR4, should be configured with 12 x 16 GB DDR4, Should support ECCSDDC ,Memory mirroring Memory rank sparing,Patrol scrubbing,Demand scrubbin
4	**Expansion Slots:** Up to 4x PCIe 3.0
5	**Drive Bays:** Should support upto 10 x SFF hot swap bays or 10 x NVME drives. Should be supplied with 2 x M.2 boot drive 480 GB SSD (RAID 1)
6	**HBA/RAID Support**: HW RAID (up to 10 drives with flash cache), should support RAID0,1,5,6 with 1Gb cache
7	**Security and Availability Features:** Availability Features, TPM 1.2/2.0; PFA; hot-swap/redundant drives, fans, and PSUs; 45°C continuous operation; light path diagnostic LEDs; front-access diagnostics via dedicated USB port
8	**Network Interface:** 2-port 1GbE, 1x dedicated 1GbE management port, 1 x 100Gbps Mellanox EDR/Intel OPA,
9	**Power (Energy Star 2.0 compliant):** 2x hot swap redundant 80 PLUS Platinum;
10	**Systems Management:** Remote GUI managemnet tool to Gather and viewing system information and inventory, monitor system status and health, alert notification, update system firmware, real time serevr power usage monitoring, capture video display content when Operating system is in hand condition. Can be integrated as single GUI for managemnt of other devices of same OEM like storage, switches etc.
11	**Regulatory compliance:** FCC, UL/CSA, VCCI, CCC,IEC,CERoHS, Energy star 2.1
Sl. No.	**Technical Specifications for Compute Nodes Qty 25**
1	**Specifications Form Factor/Height**:1U rack server

2	**Processors:** 2 × Intel Xeon Gold 5320T 20C 150W 2.3GHz Processor
3	**Memory:** 24x DIMM slots, should support Intel® Optane™ DC Persistent Memory; 2933 MHz/ 3200 MHz TruDDR4, should be configured with 12 x 16 GB DDR4,.Should support ECC SDDC, Memory mirroring,Memory rank sparing,Patrol scrubbing,Demand scrubbin
4	**Expansion Slots:** Up to 4x PCIe 3.0
5	**Drive Bays:** Should support upto 10 x SFF hot swap bays or 10 x NVME drives. Should be supplied with 2 x M.2 boot drive 480 GB SSD (RAID 1)
6	**HBA/RAID Support:** HW RAID (up to 10 drives with flash cache), should support RAID0,1,5,6 with 1Gb cache
7	**Security and Availability Features:** Availability Features, TPM 1.2/2.0; PFA; hot-swap/redundant drives, fans, and PSUs; 45°C continuous operation; light path diagnostic LEDs; front-access diagnostics via dedicated USB port
8	**Network Interface:** 2-port 1GbE, 1x dedicated 1GbE management port, 1 x 100Gbps Mellanox EDR/Intel OPA,
9	**Power (Energy Star 2.0 compliant):** 2x hot swap redundant 80 PLUS Platinum;
10	**Systems Management:** Remote GUI managemnet tool to Gather and viewing system information and inventory, Monitor system status and health, alert notification, update system firmware, real time serevr power usage monitoring, capture video display content when Operating system is in hand condition. Can be integrated as single GUI for managemnt of other devices of same OEM like storage, switches etc.
11	**Regulatory compliance:** FCC, UL/CSA,VCCI, CCC,IEC,CERoHS, Energy star 2.1

Storage with parallel File system for scratch / application data space - 100 TB

Feature	**PFS Storage**
Storage Quality Certification	The Storage OEM should be established in the Gartner Leader Quadrant
Storage Controller	The Storage box should be based on multiple controllers with Data Assurance in active-active mode configured in a NSPOF and End-to-End Data Protection.
Cache required	The system should have minimum 128 GB cache memory across the two controllers with an ability to protect data on cache if there is a controller failure or power outage. The cache on the storage should have 72hrs or more battery backup (OR) should have destaging capabilty to either flash/disk. The system should also offer extended cache based on SSD.
Drive Support	The system must support intermixing of SSD, SAS and NL-SAS/SATA drives to meet the capacity and performance requirements of the applications.
Protocols	The storage should be configured with IB protocol on storage controller (natively) itself. Any hardware/software required for this functionality shall be supplied along with it in No Single Point Of Faliure mode. System should support SAS, NVMe-FC, IISER, ISCSI, FC protocol & connectivity.
RAID configuration	Should support various RAID levels 0, 10, 5, 6.
Storage Capacity	150 on RAID 6 with 8D+2P using 4 TB NLSAS or lower size disk and scalable to 1PB of usable capacity within same storage in similar configuration and disk capacity.
Drive	The system must support intermixing of SSD, SAS and NL-SAS dual ported drives to meet the capacity and performance requirements of the applications. The system must support a minimum of

Support	a 450 disks per two controllers for scalability purpose and must use every drive, up the supported count of drives per pool, spreading out all volumes across all drives and also decrease the drive rebuild time.
Front-End and Backend connectivity	The proposed storage system should have minimum 4 numbers of 12Gbs or higher backend SAS ports, 2 numbers 100G IB ports available per controller (IB ports should be available directly on storage controllers). Should support 25GbE ISCSI.
Rack Mountable	The storage should be supplied with rack mount kit. All the necessary patch cords (Ethernet / IB/Fiber) shall be provided and installed by the vendor.
Storage functionality and Availability	The storage shall have the ability to expand LUNS/Volumes on the storage online and instantly.
	The storage shall have the ability to create logical volumes without physical capacity being available or in other words system should allow over-provisioning of the capacity. The license required for the same shall be supplied for the maximum supported capacity of the offered storage model.
	The proposed storage system should be configured to provide data protection against two simultaneous drive failures.
	The required number hard disks for parity & spares, should be provided exclusively of the usable capacity mentioned after consider RAID and Filesystem overhead.
	Storage system should allow chaging of cache block size non-dsruptively for defined RAID group levels to meet various kind of workload.
	Storage shall have capability to integerate with Object Storage for taking image or file based backup.
	System should have redundant hot swappable components like controllers, disks, power supplies, fans etc.
	The Storage System should support T10-PI standard to detects and corrects data integrity issues received from the recording server or due to hardware failures on the drives.
	System should support asynchronous and synchronous replication. System shpould be configured with Asynchronous replication license.
	System Management software should have capability to monitor perfromance for IOPs, MB/s, latency and should be able to drill down to the capabilities of monitoring controllers, disk pools, volumes, drives.
	System GUI manager should be able to manage multiple arrays together. Should support Role-based access control and audit log, support for Multi-factor Authentication
	Storage system should support SSD cache.
	Storage should have Energy star rated Platinum power supplies.
	The proposed system should support 99.999% reliability.
Point-in-times images	The storage should have the requisite licenses to create point-in-time snapshots. The storage should support minimum 2048 snapshots per system The license proposed should be for the complete supported capacity of the system.
	Offered storage array shall have capability to take snapshot. Must use latest stable technology platform, with support available for next 7 years.
	The system should support instant creation of clones of active data.
Management	Easy to use GUI based administration interface for configuration, storage management and performance analysis tools. The proposed storage should provide Proactive monitoring of the health of the system and configurable automated delivery of replacement drives when failures occur.
OS support	Support for industry-leading Operating System platforms including: LINUX, Microsoft Windows, HP-UX, SUN Solaris, IBM-AIX, etc.

	It shall support connecting hosts over iSCSI or FC and shall be supplied with any Multipathing software, if required, with the solution.
PFS	Open source BeeGFS / Lustre should be offered as Parallel File system
I/O servers	Minimum 4 x I/O servers (2 for Meta data and 2 for Object data) should be offered in HA as per the required config to achieve the 5 GB/s throughput, connectivity between I/O servers for object data and storage should be on 100G IB and also connectivity between I/O servers and HPC cluster should be on 100G IB.
Metadata	Additional 2% of usable Metadata space should be offered on SSD drives on separate storage controller pair or same controller pair. Backend connectivity to storage should be on SAS 12 G or FC 16 G in redundancy.
Perfromance	Storage with file system should deliver 5 GB / s write throughput from one pair of controller. IOR benchmark report should be submitted along with tender.
Warranty & SLA	The Hardware and software quoted should have 3 years support alongwith upgrade and updates. Hardware support should include NBD spare part delivery.

	Unified storage for user space
Storage Quality Certification	The Storage OEM should be established in the Gartner Leader Quadrant
Storage Controller	The Storage system should a unified system supporting all Block and File protocols scaling to at least 16 controllers in the same cluster in active-active configuration.
Cache required	The unified system should have minimum 64 GB data cache post protection overheads across supplied controllers with an ability to protect data on cache if there is a controller failure or power outage. Cache should be protected for Writes either through a battery backup or by destaging to flash/disk.
Drive Support	The unified system must support intermixing of SSD, SAS and SATA drives to meet the capacity and performance requirements of the applications. The system must support a minimum of 140 disks in a dual controller architecture and shuld support scale out architecture
Protocols	The storage should a true unified storage configured with iSCSI, FC, FCOE, NFS(NFSv3,NFSv4, NFSv4.1) SMB(,SMB2 & SMB3) , S3 and pNFS protocols for use with different applications and should support the maximum capacity offered by the storage system. Any hardware/software required for this functionality shall be supplied along with it in No Single Point Of Failure mode.
RAID configuration	Should support RAID 6 or equivalent (dual disk protection in a RAID group)
High Availability	The unified storage system must be configured to continuously serve data in event of any controller failure. In addition to this, it must also be possible to withstand failure of any 2 or 3 disks per RAID-Group of size not more than 28 disks. In Event, architecture uses a single pool instead of multiple RAID Groups, system should be resilient against failure of three drives for every 28 drives used in the pool
Storage Capacity	100TB usable in RAID 6 / equivalent. Storage must supplied with 12TB or less usable capacity on highest available NL-SAS Disk with appropriate RAID Group
Front-End and Backend	The proposed unified storage system should have minimum 4 x 10GigE Copper Ports for host connectivity per controller/node. Single controller/node of storage system should offer 40 Gbps of

connectivity	aggregate bandwidth for disk drive connectivity.
Rack Mountable	The unified storage should be supplied with rack mount kit. All the necessary patch cords (Ethernet and Fiber) shall be provided.
Rack Mountable	The unified storage should be supplied with rack mount kit. All the necessary patch cords (Ethernet and Fiber) shall be provided.
Storage Scalability and Upgradability	1. The unified proposed system should be field upgradeable to a higher model through data-in-place upgrades. 2. The unified Storage should be a true scale-out architecture allowing mixing of Controller/Nodes within same product line with higher configurations. 3. Unified Storage system should allow re-usage of Disk Shelves with higher models of the same product line.
Storage functionality	The unified storage shall have the ability to expand LUNS/Volumes on the storage online and instantly.
	The unified storage shall have the ability to create logical volumes without physical capacity being available or in other words system should allow over-provisioning of the capacity. The license required for the same shall be supplied for the maximum supported capacity of the offered storage model.
	The unified storage should be configured with Quality of Service feature for IOPs/Throughput for both Block and File.
	The unified storage shall support logical partitioning of controllers in future such that each partition appears as a separate Virtual storage in itself for both block and file.
	The storage should support data tiering with real-time movement of hot data to high performing drives. It should offer the capability to move data between one tier of drives to another tier of drives.
	The proposed unified storage system should be configured to provide data protection against two simultaneous drive failures.
	The required number hard disks for parity & spares, should be provided exclusively of the usable capacity mentioned.
	Unified System should have redundant hot swappable components like controllers, disks, power supplies, fans etc.
Point-in-times images	The unified storage should have the requisite licenses to create point-in-time snapshots. The storage should support minimum 250 snapshots per volume/LUN. The license proposed should be for the complete supported capacity of the unified system for both block and file.
	The unified system should support instant creation of clones of active data, with near zero performance impact for both block and file.
Encryption for Data At Rest	The proposed storage array must support data at rest encryption offering industry standard certification/compliance. The storage array should support data at rest encryption using self encrypting drives or controller based functionality there by not impacting performance.
Management	Single management, easy to use GUI based and web enabled administration interface for configuration, storage management and performance analysis tools for both block and file.
Remote Support &	"Storage management should support ""Call home"" facility with web based self service portal providing an integrated, efficient monitoring and reporting capability and supporting data collection. Management software should provide features like: 1. Automated call home feature 2.

Diagnostics	Nonintrusive alerting 3. Performance and Capacity reports 4. Ongoing health check analysis"
OS support	"Support for industry-leading Operating System platforms including: LINUX, Microsoft Windows, HP-UX, SUN Solaris, IBM-AIX, etc. Any Multipathing software required for the solution must be supplied for unlimited host connectivity"
De-Duplication, Compression and Compaction	Proposed unified storage should support Iline as well As Post Process block level data de-duplication,compression and compactio for all kinds of data (structured & unstructured) on both block and file.
Upgrade Protection	The system proposed should be latest prevailing model,and the proposed model should be supported by OEM atleast for 5 years from the date of announcement of end of sale with 4 hour part replacement guarantee
Warranty & SLA	The Hardware and software quoted should have 3 years support along with upgrade and updates.

	Interconnect
Primary	100% Non blocking architecture
	Mellanox HDR with required no. of ports in 100% non blocking architecture
	Required no. ports with cables should be offered in Fat tree topology with 100% NON BLOCKING ARCHITECTURE
	5 additional ports should be offered.
Secondary	Gigabit Ethernet switch with required no. of port with required cables of appropriate lenghth should be offered. If two switches are offered then 2 x 10G SFP+ uplink port should be poffered with cables for switch interconnect
	Cluster manager software
Management	Server OEM supported/Bidder supported cluster manager software
	Must support both GPU and CPU based hybrid cluster
	Software should be capable of provisioning and managing the cluster
	Cluster should support High Availability (HA) feature
	Customize Network and Compute Node profile through GUI or command prompt.
	Must support user account management from the master node
	Job scheduler
Job scheduler	Open source bidder supported
	Application integration support

	resource-aware and topology-aware scheduling
	Support of job submission through CLI/GUI
	1 month manpower + 1 week training+ Implementation

Design Requirements / Scope of work

S. No.	Description of Requirements
1	**Scope of Work**
1.1	This specification covers intelligent integrated/inbuilt infrastructure, standalone system design, engineering, manufacture, assembly, testing at manufacturer's works, supply, delivery at site, unloading, handling, proper storage at site, erection, testing and commissioning at site of complete infrastructure for the proposed Data Centre as detailed in the specification, complete with all accessories required for efficient and trouble free operations
1.2	Modular and scalable design for power and cooling : All the components used to design the system should be redundant and in the Events of failure the components can be maintained easily. All the components of the infrastructure should be such that it can be easily dismantled and Relocated to different location
2	**Requirements**
2.1	Integrated Data Center Infrastructure Solution (hereafter referred as 'Smart DC Solution') with Prefabricated Cold and Hot aisle containment of 02 racks should cater IT load of minimum 35 kVA
2.2	The Intelligent Integrated Infrastructure essentially includes internal redundant or backup power supplies, environmental controls (e.g., precision air conditioning, fire suppression, smoke detection, water leak detection, humidity sensor, intelligent monitoring system, security devices, etc.) Air-conditioning system is to have 100 % reliability on 24 x 7 basis with adequate standby for system redundancy. (Failure of any single unit; still to meet the total cooling requirement). The ambient temperature considered for the calculation of total tonnage requirement should be 45 Degrees
2.3	The detail specifications of the DC Solution, standalone system shall be in adherence to standard Data Centre guidelines thus shall be composed of multiple active power and cooling distribution paths, but only one path active. Shall have redundant components.
3	**Solution shall have following components: -**
3.1	**In-Row closed loop Air-Conditioning**
3.1.1	Data center server and network racks should be equipped with cooling units to provide closed loop precision cooling system which should be able to cool the equipment's uniformly right from 1st U to 42nd U of Rack through Row/Rack Based Cooling
3.1.2	Precision Air Cooling solution should be of 35kW capacity with standby (N+N Redundancy) Precision Air Conditioner should have following Features: 1. Cooling System should be DX (Variable capacity/Digital Scroll) type. 2. Inbuilt Heater and Humidifier to cater IT load up to 35kVA 3. Outdoor Unit & Microprocessor based Controller

3.2	**UPS System**
3.2.1	UPS should be of 40 kVA in N+ N topology, rack mountable with pf up to 0.9 and efficiency up to 95%. Other features of UPS system are as follows: 1.True On-line UPS with Widest input range (305V-477V) 2.Double conversion and IGBT technology: Full IGBT Rectifier /Battery Charger and IGBT based Inverter 3.Facility for remote monitoring 4.N+N redundancy should be provided.
3.3	**Power Distribution**
3.3.1	rack PDU with 18nos of IEC C13 Sockets & 6 nos of IEC C19 Socket with 2.5 mtr power chord with 32A, 3 Phase MCB (each rack having two PDU's)
3.4	**Main Electrical Panel and Cabling**
3.4.1	DB panel should be mounted on to utility rack with all internal cabling integrated into the same. Essential MCB/MCCB should be provided with electrical system. All the PDUs inside all racks should be connected by the UPS. DB panel mounted on Utility rack shall be covered with Novec 1230 Gas based fire suppression system.
3.5	**Fire Detection and Suppression**
3.5.1	Fire detection and suppression system should be mounted in panel adjacent to Smart Racks to avoid consumption of any usable U space an In-rack built-in feature of solution. It should have Fire alarm and fire suppression unit and the fire suppression agent should be NOVEC 1230 Gas as per NFPA guidelines.
3.6	**Environmental Controls**
3.6.1	Smart Racks should include basic environmental controls: • Smoke Detector • Water Leak Detection system • Temperature/ Humidity Sensor • Door Sensor • Alarm beacon
3.7	**Racks and U Space**
3.7.1	2 Nos. of 42 U racks of dimension 600 mm x 1000 mm
3.7.2	Solution should have Min 75 U (total) space available for IT and network equipment. (UPS internal & Battery External)
3.7.3	Blanking Panel: 70% each for all the supplied Racks.
3.8	**Monitoring**
3.8.1	Each set of Integrated racks should have IP based monitoring facility of all the passive parameters inside racks.

3.8.2	Capable for sending Email Alerts
3.8.3	Monitoring unit should occupy maximum 1 U space of rack height
3.9	**Other Features:**
3.9.1	The Intelligent integrated infrastructure would provide much functionality and some of the key functionalities are – Both Cold aisle & hot aisle containment should be of minimum 300mm each for airflow, Air tight Thermally insulated cabinet, remote Management.
3.9.2	Rack based Biometric access control system provided should be controlled by common access control panel with access control for both front as well as rear doors. IP based Access control with user exclusive authentication.
3.9.3	Critical Component's for Integrated Server Racks system (Rack, rack PDU, Cooling, UPS and monitoring system) should be from same & single OEM for Seamless Integration & better Service Supports
3.9.4	Electrical Distribution board within Utility Cabinet to have fire detection & Novec Based Fire Suppression system
3.9.5	Status based LED Lights within Smart Racks
3.9.6	9"LCD touch screen HMI display for environmental parameters, menu driven user interface & instantaneous PUE display.
3.9.7	Single Source Electrical Panel with Energy Meter compatible to HMI for real time Power Usage Monitoring.

PRODUCT TECHNICAL SPECIFICATIONS

1.	**Uninterrupted Power Supply (UPS) System**
1.1	**General Description:**
	Supply, install, test and commissioning of true online, double conversion, high efficiency, and high power factor Uninterruptible Power Systems (UPS) rated at 2 x 40 KVA with battery backup support for combined 30 minutes on full load. UPS shall be rack mountable & The backup batteries should be supplied with the necessary arrangements to mount outside the cabinet.
1.1.1	Configuration: 2 x 40kVA (N+N Redundancy)
1.2	**Scope**
	• The scope shall include design, supply, installation, testing and commissioning of the complete UPS system and related accessories including: • All Server racks will get power feed from two independent 40 KVA UPS systems to ensure redundancy. • All systems should be tested in factory as per the manufactures recommended procedure for all operating parameters and the test results should be provided during the installation. • Delivery at site, unloading, handling, installation of complete system including interconnection from the UPS system to batteries and to input / output panels switches. All interconnections shall be done using multi-strand Flexible Copper conductor cables of appropriate sizes. • Scope includes battery bank connections and providing safety barriers for all bus bars and cable connection

	leads on battery racks. • Energizing of UPS and Battery bank commissioning. • UPS control parameters setting and complete testing of system on load. • Service backup by engineer till system is fully operational and subsequently training is to be provided to the concerned persons. • Any upgrade of the system hardware and associated other software during the warranty period should be supplied at free of charge. • Acceptance tests will be carried out after installation and the systems will be taken over only after successful completion of the acceptance tests. • Operation and service manuals of the systems containing technical / Electronic drawings / circuit diagrams complete in all respects should be supplied.	
1.2.2	**Specification / features of the Each UPS system are as follows:** • Widest input range. • Double conversion and IGBT technology. • Full IGBT Rectifier / Battery charger • IGBT based Inverter • Batteries to support combined 30minutes full load backup. • Power distribution panels • Facility for remote viewing	
1.3	**UPS other technical specification**	
1.3.1	**General**	
	UPS type	ON-LINE
	Model Name	Bidder to Specify
	Rating (VA/W)	40,000 VA / 36,000 W
	Make	Bidder to Specify
	Technology	IGBT with PWM Switching
	Crest Factor	3:1
	Double Conversion efficiency	94.9 %
	Eco mode efficiency	98.5 %
1.3.2	**Input Ratings**	
	Nominal Input Voltage	380/400/415V (3-phase ,4 Wire)
	Permissible input voltage variation at full load	305 V – 477 VAC
	Nominal input frequency	50 Hz

	Permissible input frequencies variation	40 Hz to 70 Hz
	Input power factor at full load	> 0.99 at full load
	Input Current distortion with linear load	< 4%
1.3.3	**Output Ratings**	
	Nominal output voltage	380/400/415V (3-phase with Neutral)
	Voltage Precision	1%
	Nominal output frequency	50Hz
	Frequency Precision	0.25%
	Over load capability	105%-125%; 5 Mins, 125%-150%; 1Min
	Steady state voltage stability	±1% for balanced three phase load; ±2% for unbalanced load
	Total voltage harmonic distortion	2% (0 ~ 100% linear load); 5% (0 ~ 100% non-linear load)
	Load Crest Factor	3:1 Comply with IEC 62040-3
	Output Power Factor	0.9
1.3.4	**Bypass**	
	Voltage Range	+15% -20%
	Frequency	50/ 60Hz
	Frequency Range	+/-20%
1.3.5	**BATTERY PARAMETERS**	
	Type	SMF
	No. of battery blocks	32-40
	Battery nominal voltage	12V
	Battery Voltage	384-480Vdc
1.3.6	**ENVIRONMENTAL PARAMETERS**	
	Operating temperature	0 to 40 deg. Centigrade
	Relative Humidity	5-95% without Condensation
	Altitude	1000 meters
	Temperature de-rating	30-40deg de-rating
	Altitude de-rating	derate power by 1% per 100m when above 1000m)
	Noise level	<58db

1.3.7	**MECHANICAL PARAMETERS**	
	Height X width X Depth (MM)	Bidder to specify
	Weight	Bidder to specify
	Ventilation	Forced - Air cooled
	Cable Entry	terminal block
	Color / Panel finish	EG7021
1.3.8	**STANDARDS**	
	Safety	IEC/EN62040-1-1
	Electromagnetic Compatibility	IEC/EN62040-1-2, IEC/EN61000-3-11, IEC/EN61000-3-12, YD/T1095-2008
	Surge Protection	IEC/EN62040-2, meeting IEC/EN61000-4-5
	Protection	IP20
1.3.9	**COMMUNICATION & MONITORING SOFTWARE**	USB/Intelligent Slot (Dry Contact Card/ Modbus Card/ RS 485 Card)
1.4	**Installation and Configuration**	
	1. The entire system shall be installed as per manufacturer's recommendations & instructions including all interconnections for supply & control circuits. 2. All components shall be clearly identified using labels including battery cells individually. 3. Services of authorized representative or manufacturer for supervision of installation, connections, testing, & adjustments shall be provided.	
1.5	**Testing and Commissioning**	
	1. Under supervision of manufacturer's representative all system functions, operations, protective features shall be checked & pre-set to ensure compliance or specifications. 2. Test the system as per recommendations & test listed below using pre-calibrated instruments. 3. Simulation of malfunctions to verify protective device operations. 4. Duration of supply on emergency. Low battery voltage alarm & shutdown, transfer & restoration of normal supply. 5. Remote status & alarm tests. 6. In case of test any shortfalls / faults, the same shall be rectified & test procedure shall be again repeated to establish satisfactory performance.	
2	**Precision Air Conditioning System of 35kW Capacity**	

2.1	**Configuration**	
	Supply, installation, testing and commissioning of DX Type floor mount Row Based Air-conditioning units designed specifically for high sensible heat ratio with variable cooling technique to match the low latent loads of systems to be installed adjacent to cabinet for effective and uniform distribution of cooling. It shall be specifically designed for service from the front and rear of the unit. The unit shall be capable to be mounted between the racks or at the end of row. The unit shall modulate cooling capacity and airflow based on requirements.	
2.2	**Direct Expansion**	
2.2.1		
	Cooling Circuits • *One refrigeration circuit, incorporating a high efficiency, fully hermetic variable capacity compressor with crankcase heater, safety valve, filter drier, moisture indicating sight glass, liquid line solenoid valve and an externally equalized expansion valve* • Each compressor is equipped with pre-set highand low pressure switches for protection against high condensing and low evaporating temperatures. The low pressure switch features an automatic reset (with an adjustable delay for winter start-up). • The unit shall be provided with additional protection against high ambient temperature. When the temperature goes over the design conditions, the unit remains in operation with partial load (20% decrease against required). If such protection is not sufficient High Pressure switch shall generate an high pressure alarm and the unit shuts down - manual reset shall be required • The inclined evaporator coil is manufactured from copper tubes, mechanically bonded to hydrophilic painted aluminum fins, with a stainless-steel condensate drain pan. The large face area/low velocity coil allows precise control of temperature and humidity* during cooling and dehumidification and is designed to optimize fluid velocity and minimize pressure drop The moisture indicating sight glass, liquid line solenoid valve and expansion valve for each circuit are mounted in a service compartment, isolated from the air stream, to allow checking and adjustment while the unit is in operation.	
2.2.2	**Fan Section** • Units is offered with two plug EC Direct Drive Fan, High efficiency, external rotor electronically commutated (EC) motor with integrated electronics, True soft start characteristics (inrush protection, short circuit of motor output. Fans are IP54 current	

	lower than operating current), Backward curve, corrosion resistant fan wheel, Maintenance free design and construction. The fan section shall be designed for higher air flow. The fan shall be protected over temperature of motor, electronics, locked rotor, Protection class F.	
2.2.3	**Cabinet and Frame** • The unit shall be powder painted panels with ½" (or 10mm) insulation. A hinged control access panel opens to a second front panel which is a protection enclosure for high voltage components. The frame is painted with a powder coat finish to protect against corrosion. The unit is totally front and rear accessible including any component removal.	
2.2.4	**Air Filtration** • The filter cells are made of two deep pleated 4" filters rated MERV8 following ASHRAE 52.2 (45% by ASHRAE 52.1) or G4 following EN779, located within the cabinet, and accessible from the rear of the unit. Frame of the filter shall be made of GI/Aluminium. • Clogged filter alarm must be available for standard.	
2.2.5	**Refrigerant** • All units equipped with direct expansion circuit are suitable for R410A refrigerant.	
2.2.6	***Microprocessor Controller*** • *Air conditioning models should be controlled by microprocessor based controller. It can be programmed to control the function of every device within the unit via I/O* • *The controller shall allow setting and monitoring of the room parameters. Unit utilizes multiple temperature sensors placed at the rack inlet, to ensure management and control of temperature by rack.* • The controller should allow setting and monitoring of the following space parameters: o Air inlet Temperature o Air supply Temperature (remote sensors at rack inlet) o Return Temperature set-point o Supply Temperature set-point o Return Temperature band o Supply Temperature band o Humidity (inlet) o Humidity set-point o Humidity band o Rack Min, Max and Average temperature • The example of available warnings / alarms: o High supply temperature, Low supply temperature o High return humidity Low return humidity	

	○ Loss of airflow ○ Compressor Low Pressure, Compressor High Pressure ○ Electrical heater high temperature (When applicable) ○ Clogged filter, Customer input (No 4 inputs) ○ LP transducer fail, Call service (customer input) ○ High temperature (customer input) ○ Unit hours exceeded ○ Compressor hours exceed ○ Humidifier hours exceed ○ Supply sensor failure ○ Network failure ○ Humidifier problem ○ Digital scroll high temperature ○ Smoke detected ○ Fire alarm ○ Rack sensor failure	
	• *Following features should be incorporated in the controller:* ○ Status Report of the latest 400 event-messages of the unit. ○ Input for remote on-off and volt-free contacts for simple remote monitoring of low and high priority alarms: high/low temperature, high/low refrigerant pressure, fan/control failure, compressor/control failure and others are available ○ LAN management: functions provided as standard include stand- by (in case of failure of the unit in operation, the second one starts automatically), and automatic rotation Automatic restart must be provided after a power failure	
2.2.7	**Monitoring** 1. There should be SNMP and HTTP/Web-management capability for enhanced communications and control of HPM systems. The cards make use of an Ethernet network (100Mbit/1Gbit) to monitor and control a wide range of operating parameters, alarms and notifications to a standard web browser (Internet Explorer). 2. The unit shall also include input volt-free contacts for simple remote monitoring of low and high priority alarms: high/low temperature, high/low refrigerant pressure, fan/control failure, compressor/control failure and others are available.	
2.2.8	**Condenser** • The condenser should be with fan speed controller designed & set for usages of R410A refrigerant. Condenser should work at 0 deg C to 45 deg C ambient temperature. The motorized fan shall be IP54, protection class F	

2.2.9	**Humidifier** • The unit is fitted with a canister type steam humidifier suitable for use with water of varying degrees of hardness, provided that the water is not treated or demineralized (Conductivity range 125-500□S/cm). The humidifier is complete with a water inlet valve, water outlet valve and a maximum water level sensor, disposable cylinder, steam distributor and electronic controls. Humidifier control is of the ON-OFF type, can be also disabled by remote contact Humidifier is removable from the rear of the cabinet	
3	**Racks & Accessories**	
3.1	Rack Containment Frame is 42 U, 19" mounting type with standard Rack + Cold & Hot Aisle Containment of minimum 300 mm each	
3.2	Rack frame is, scalable and modular with safe load carrying capacity of 1000 Kg	
3.3	Color shade of Rack is RAL 7021	
3.4	Base plinth with 100 mm height	
3.5	Cable entry provision from top & bottom both side of rack	
3.6	Cut outs with rubber grommet on top and bottom cover of rack for cable entry	
3.7	OEM Cable manager on both LHS & RHS on rear side	
3. 8	Front glass door for complete 42U height visibility & Rear Split Steel door	
3. 9	Thermally insulated cold aisle chamber	
3.10	Blanking panels to prevent air mixing	
3.11	Fixed Shelf to be provided with each rack	
3.12	Plastic Cable duct on vertical LH & RH section of racks for cable routing	
3.13	Front Rack doors to be provided with Biometric Access Control with 02 nos. of Electromagnetic lock per door	
3.14	Gas spring to be provided on front doors of racks	
3.15	Status based LED light to be provided on each rack	
3.16	Each rack enclosure should be physically separated through caged partition at cold & hot aisle to avoid unauthorized access from one rack to another.	
4	**Safety and Security Systems**	
4.1	**Fire Alarm and Fire Suppression System**	

	The integrated infrastructure solution should be designed as a complete stand-alone unit with security, fire detection and fire suppression systems. Each of the systems is inter-operable and inter connected. Environmentally friendly NOVEC 1230 agent should be used to ensure that no harm to human beings and environment is caused. Following systems should be installed. 1) NOVEC 1230 Clean Agent for fire suppression system 2) Fire detection and alarm systems, with detectors and panel. 3) Protected area: The entire volume of the server racks along with electrical DB inside utility cabinet shall be protected with fire detection and fire suppression system. The doors should be secured by Access Control system. 4) The NOVEC 1230 system shall be designed and installed as per NFPA 2001-2012 Edition. SMPV, Petroleum and Safety Explosives Organization (PESO) approved cylinder filled with NOVEC 1230 is installed.	
4.2	**Rodent Repellent System**	
4.2.1	The proposed Smart Racks/cabinets should be covered by Rodent Repellent System.	
4.3	**Biometric Based Access Control**	
	The IP based Access Control System shall be used to serve the objective of allowing access to authorized personnel only. The system deployed will be based on Biometric Technology. The front & rear rack doors will be provided with magnetic locks, and will operate on fail-safe principle through one common Biometric access control system. The system would be designed and implemented to provide following functionality: • Configurable system for user defined access • Built-in Real Time Clock (RTC), calendar; complete Database stored locally and shall be capable of operating offline on standalone mode • Record, report and archive each and every activity (permission granted and / or rejected) with log formats • Fail safe operation in case of no-power condition and abnormal condition such as fire, theft, intrusion, loss of access control, etc. • At the biometric reader, user presents the finger to the biometric reader which is unique to each employee. The pattern is read and	

	compared with stored data to grant / deny access	
5	**Remote Monitoring**	
	Supply and installation 1U rack mountable monitoring system with Sensors & notification system. The system shall continuously collect critical information from network connected devices such as, temperature & humidity sensors, Water Leak sensor and other dry contact monitoring. Beacon & Buzzer-Sound and Flash Led Alarm. Based on pre-set parameters, automated email alerts are sent to the intended recipients and mobile app-based monitoring.	
	1) Intelligent Rack environment remote monitoring	
	2) Modbus 485 Communications	
	3) SNMP Communication	
	4) Single window for monitoring all sensors	
	5) Data and logs of historical information of alarms and notification	
	6) Temperature & Humidity Sensor, Door Sensor, WLD Sensor, Smoke Detection sensor. Alarm device with LED flash and sound option	
6	**HMI – Smart Racks Graphical Interface**	
	Smart Racks should have functionality to graphically monitor the passive infrastructure ---- 1) 9-inch wide touch screen HMI display with a very user-friendly interface 2) It should be menu driven system, Thermal management, Power supply environmental quantities, alarms, logs, and provided a total of menu items, breakdown of the sub-menu item the next menu level, 3) First authorization on LCD, is only authorized once, authorized system will automatically skip the authorization page while booting 4) System Configuration page includes integrated cabinet configuration 5) Home page presents system function information (Such as Date & Time ex.), system performance parameters and critical system parameters	
	System performance parameters: a) Enclosures: thermal path average temperature, the IT load cabinet single cabinet (configured for an intelligent PDU).	

	b) Air conditioning: return air temperature, supply air temperature c) All the components (Intelligent PDUs ext.) shall be graphically represented on HMI. d) Real time PUE monitoring.	
	Critical system parameters: a) UPS operation: AC mode/bypass mode/Battery mode/standby mode, The system load factor b) HVAC Operation – Animated fan during Run & Compressor status display IT racks parameters – Temp. & Humidity Parameters are highlighted for normal & abnormal values	
	Thermal Management: a) Return air temperature profile cross-ordinate b) cooling fan state to the operating state, the corresponding icon is animated; alarm flood state is, icon animation. Door status icon static display, the door opened and closed the door to a different style static icon.	
	Supply & Distribution: a) UPS page displays for the distribution parameters and real-time power system operating mode b) UPS working state: AC mode / bypass mode / Battery mode / standby mode c) The operating state of the system: Single / 1 + 1 parallel / 2N double bus d) For each PDU distribution -PDU page displays the total current and power component e) when the PDU voltage value, the current value exceeds the set range, the system will generate a corresponding alarm; on the contrary, the alarm disappears	
	Environmental Amount: (The amount of ambient acquisition) a) acquisition and display status of the current environmental data amount of the rack, comprising: a real-time value of the respective collection point temperature and humidity sensors, front and rear door state, hot/cold aisles average temperature curve moisture profile b) When the air conditioning is working properly, hot and cold airflow patterns dynamic channel is turned on when the air conditioning is not working, dynamic airflow patterns hot and cold aisles disappear c) Door status icon static display, the door opened and closed the door to a different style static icon d) when the passage of hot / cold temperature and humidity sensor	

	measured value exceeds the set range, the system will generate a corresponding alarm; conversely, when the hot / cold aisles temperature and humidity sensor measurement range is set to fall the alarm disappears	
	Warning – Alarm-Current Alarm: a) Displays the Current Alarms Page b) The current alarm is divided into emergency alarms, major alarms and general alarms c) When the current alarms and buzzers system in the normal mode, the LCD buzzer will sound an alarm, and for 5 minutes, the duration of the latest alarm generation time from a timer In maintenance mode, the buzzer will not sound an alarm. After the lifting of maintenance mode, buzzer return to normal mode	
	Alarm - historical alarm: a) Alarm History page provides a display system and screening history alarms b) LCD page provides only historical records up to 100 within the system one week. For longer or more the number of alarm history, Web pages can be viewed in alarm management	
7	**Cleaning**	
	1) On completion of installation, testing of the system all components, cabinets etc. shall be cleaned & unwanted material, debris shall be removed from site 2) Scratches dents if any shall be cleaned & touched up to match the original finish 3) Cable and electric wire should be arranged in a way that minimize the physical tempering with the existing infrastructure and should be properly managed maintaining the aesthetics	
8	**Maintenance and Support**	
	After Sale Service 1. Service shall be guaranteed by supplier during defect liability period / guarantee period. 2. Product OEM shall offer the Data Centre with 24 x 7 services through their authorized service engineer for a period of at least 1 year. 3. Product OEM shall provide ON SITE warranty for from the date of taking over of the equipment after the acceptance tests. 4. Basic training and operational training to be provided after the successful installation of DC	

	5. Quarterly PM to be carried out during the warranty period.	

MINIMUM ELIGIBILITY CRITERIA FOR OEM

Proposals not complying with minimum eligibility criteria, as enumerated below, will be rejected and will not be considered for evaluation of technical bid. The proposal should adhere to the following minimum eligibility criteria:

The OEM / partner should be in the HPC business for the last 5 years in India and should have fully operational office from min 5-years. Please submit documentary evidence for the same. Critical Component's for Integrated Server Racks system (Rack, Cooling, UPS, rack PDU and monitoring system) should be from same & single OEM for Seamless Integration & better Service Supports. OEM Service Support for Major Equipment's: OEM or Manufacturer should have its own service centre.
The OEM must have manufacturing and Engineering facility in India for cooling solutions of Data Center. OEM or Manufacturer should be ISO 9001: 2000, ISO 14001, ISO/IEC 27001:2013 and ISO 45001 certified.
Both OEM & Bidder must have spares center/warehouse/support office in New-Delhi for support services. The OEM should have at least three qualified and experienced DC certified professionals like CDCP/CDCS/CDCE/ATD on their company payroll with minimum 3 years' experience in Data Centre designing and implementation.
The Source of all items shall be either from our country or from the countries who have a good heritage on cyber security and amicable to our country.
The OEM will be responsible for supply, installation, configuration, commissioning, testing, maintenance and support for both hardware and software during the warranty period.
The Order quantity may increase/ decrease as per the discretion of IIT-Delhi.
Bidder should be financially sound to execute the order i.e. Bidder should have annual turnover of average of Rs. 10Crore in last three Financial Year.
OEM should have a registered office in India from last five years.
Bidder should be an overall profitable organization from last three financial year.
The institutes reserves the right of accepting or rejecting any quotation without assigning any reason thereof.
Warranty should be 3 years parts, 3 years labour, 3 years onsite Support.
Delivery period should not be more than 8 weeks.
Quotation must be valid for atleast 60 days.
Your quotation should contain Authorization Letter from OEM.
The bid should be submitted in two bid system i.e. Technical Bid and Financial Bid.
Bidder should provide power and cooling requirement in their technical bid.
Terms and conditions should be clearly mentioned in the technical Bid.
It is mandatory for bidders to quote items having local content minimum 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017, No. P-45021/2/2017-PP (B.EII) dated 16.09.2020 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India. (Submit duly filled Annexure VIII for the same). The Annexure VIII once submitted in the Technical Bid will be final. Submission of Revised Annexure VIII will NOT be accepted.

Compute OEM should have minimum 5 entries in latest Top 500 susper computer list Top500.org.
Storage OEM should be in Gartner Leader Quadrant
OEM should have physical presence in India with registered service & sales office in India since last 3 years
Severs supplied should be with factory integrated.
OEM should have net positive worth for last 2 years.

A complete set of tender documents* may be Download by prospective bidder free of cost from the website http://eprocure.gov.in/eprocure/app. Bidder has to make payment of requisite fees (i.e. Tender fees, if any online through RTGS/NEFT only.

Terms & Conditions Details

Sl. No.	Specification
1.	**Due date**: The tender has to be submitted on-line before the due date. The offers received after the due date and time will not be considered. No manual bids will be considered.
2.	**Preparation of Bids**: The offer/bid should be submitted in two bid systems i.e. Technical bid and Financial bid. The Technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items mentioned in the technical bid in the given format i.e BoQ_XXXX. The Technical bid and the financial bid should be submitted Online. ***Note: -Comparison of prices will be done ONLY on the bids submitted for the Main Equipment and anything asked as 'Optional' in the specs is not to be included for overall comparison.***
3.	**EMD (if applicable)**: The tenderer should submit an EMD amount through RTGS/NEFT. The Technical Bid without EMD would be considered as UNRESPONSIVE and will not be accepted. The EMD will be refunded without any interest to the unsuccessful bidders after the award of contract. Refer to Schedule (at page 1 of this document) for its actual place of submission.
4.	**Refund of EMD**: The EMD will be returned to unsuccessful Tenderer only after the Tenders are finalized. In case of successful Tenderer, it will be retained till the successful and complete installation of the equipment.
5.	**Opening of the tender**: The online bid will be opened by a committee duly constituted for this purpose. Online bids (complete in all respect) received along with EMD (if any) will be opened as mentioned at "Annexure: Schedule" in presence of bidders representative if available. Only one representative will be allowed to participate in the tender opening. Bid received without EMD (if present) will be rejected straight way. The technical bid will be opened online first and it will be examined by a technical committee (as per specification and requirement). The financial offer/bid will be opened only for the offer/bid which technically meets all requirements as per the specification, and will be opened in the presence of the vendor's representatives subsequently for further evaluation. The bidders if interested may participate on the tender opening Date and Time. The bidder should produce authorization letter from their company to participate in the tender opening.
6.	**Acceptance/ Rejection of bids:** The Committee reserves the right to reject any or all offers without assigning any reason.
7.	**Pre-qualification criteria:** (i) Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed. (ii) An undertaking from the OEM is required stating that they would facilitate the bidder on a regular basis with technology/product updates and extend support for the warranty as well. (Ref. Annexure-II) (iii) OEM should be internationally reputed Branded Company. (iv) Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between bidder specification and supporting documents etc. may lead to rejection of the bid. (v) In the tender, either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender. (vi) If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
8.	**Performance Security**: The supplier shall require to submit the performance security in the form of irrevocable bank guarantee issued by any Indian Nationalized Bank for an amount which is stated at page #1 of the tender document within 21 days from the date of receipt of the purchase order and should be kept valid for a period of 60 days beyond the date of completion of warranty period.
9.	**Force Majeure:** The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure. • For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

	• If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
10.	**Risk Purchase Clause**: In event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from the other source on the total risk of the supplier under risk purchase clause.
11.	**Packing Instructions**: Each package will be marked on three sides with proper paint/indelible ink, the following: i. Item Nomenclature ii. Order/Contract No. iii. Supplier's Name and Address iv. Consignee details v. Packing list reference number
12.	**Delivery and Documents:** Delivery of the goods should be made within a maximum of 08 weeks *(for goods ready for shipment)* & Maximum *(To be filled by Purchaser)* weeks *(For special/ to be fabricated goods) from the date of the Purchase Order*. Within 24 hours of shipment, the supplier shall notify the purchaser and the insurance company by email the full details of the shipment including contract number, railway receipt number/ AAP etc. and date, description of goods, quantity, name of the consignee, invoice etc. The supplier shall mail the following documents to the purchaser with a copy to the insurance company: 1. 4 Copies of the Supplier invoice showing contract number, goods' description, quantity 2. unit price, total amount; 3. Insurance Certificate if applicable; 4. Manufacturer's/Supplier's warranty certificate; 5. Inspection Certificate issued by the nominated inspection agency, if any 6. Supplier's factory inspection report; and 7. Certificate of Origin (if possible by the beneficiary); 8. Two copies of the packing list identifying the contents of each package. 9. The above documents should be received by the Purchaser before arrival of the Goods (except where the Goods have been delivered directly to the Consignee with all documents) and, if not received, the Supplier will be responsible for any consequent expenses.
13.	**Delayed delivery:** If the delivery is not made within the due date for any reason, the Committee will have the right to impose penalty 1% per week and the maximum deduction is 10% of the contract value / price.
14.	**Prices**: The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges. Price quoted should be in Indian Rupees, free delivery at IIT Delhi Campus at site (DDP/FOR). Further, depending on the nature of the goods, there may be cost elements towards installation and commissioning, operator's training, and so on. Normally, it may be included in the equipment cost but if it is quoted separately, the same will be added in the item price for the determination of ranking of the bidders. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However, the percentage of taxes & duties shall be clearly indicated. Necessary certificate will be issued on demand. The Buyer/PFC will have the right to award contracts to different Bidders for being lowest in particular items. For ranking of offers, price of complete scope of supply as detailed in technical specifications, the procuring authority/Purchaser may decide as follows for comparison of price bid - (i) All items of the bid which are mandatorily required to meet the tendered specifications of the

	item/system (ii) If a bidder has put certain items/modules which are required to meet the tendered specifications in the 'optional' part of the bid, then such optional items shall also be included for the purpose of price comparison (iii) On the other hand, if a bidder has inadvertently included any item/module in its main price bid which is not required as per tender specifications, then the price of such item/module shall be excluded from the price comparison provided that the price for the said item/module is clearly reflected separately in the bid (iv) Anything asked as 'optional' in our specs is not to be included for overall comparison **Non-conformities between Figures and words:** Sometimes, non-conformities/errors are also observed in responsive tenders between the quoted prices in figures and in words. This situation normally does not arise in case of e-Procurement. This should be taken care of in the manner indicated below: (i) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail and the total price will be corrected. (ii) If there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and the total shall be corrected; (iii) If there is a discrepancy between words and figures, the amount in words will prevail for calculation of price.
15.	**Notices:** For the purpose of all notices, the following shall be the address of the Purchaser and Supplier. **Purchaser:** Prof. Saswata Bhattacharya, PhD,Associate Professor Department of Physics Indian Institute of Technology Hauz Khas, New Delhi - 110016. **Supplier:** (To be filled in by the supplier) **(Supplier should submit its supplies information as per Annexure-II).** _____
16.	**Progress of Supply**: Wherever applicable, supplier shall regularly intimate progress of supply, in writing, to the Purchaser as under: 1. Quantity offered for inspection and date; 2. Quantity accepted/rejected by inspecting agency and date; 3. Quantity dispatched/delivered to consignees and date; 4. Quantity where incidental services have been satisfactorily completed with date; 5. Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date; 6. Date of completion of entire Contract including incidental services, if any; and **7.** Date of receipt of entire payments under the Contract (In case of stage-wise inspection, details required may also be specified).
17.	**Inspection and Tests:** Inspection and tests prior to shipment of Goods and at final acceptance are as follows: • After the goods are manufactured and assembled, inspection and testing of the goods shall be carried out at the supplier's plant by the supplier, prior to shipment to check whether the goods are in conformity with the technical specifications attached to the purchase order. Manufacturer's test certificate with data sheet shall be issued to this effect and submitted along with the delivery documents. The purchaser shall be present at the supplier's premises during such inspection and testing if need is felt. The location where the inspection is

	required to be conducted should be clearly indicated. The supplier shall inform the purchaser about the site preparation, if any, needed for installation of the goods at the purchaser's site at the time of submission of order acceptance. • The acceptance test will be conducted by the Purchaser, their consultant or other such person nominated by the Purchaser at its option after the equipment is installed at purchaser's site in the presence of supplier's representatives. The acceptance will involve trouble free operation and ascertaining conformity with the ordered specifications and quality. There shall not be any additional charges for carrying out acceptance test. No malfunction, partial or complete failure of any part of the equipment is expected to occur. The Supplier shall maintain necessary log in respect of the result of the test to establish to the entire satisfaction of the Purchaser, the successful completion of the test specified. • In the event of the ordered item failing to pass the acceptance test, a period not exceeding one weeks will be given to rectify the defects and clear the acceptance test, failing which the Purchaser reserve the right to get the equipment replaced by the Supplier at no extra cost to the Purchaser. • Successful conduct and conclusion of the acceptance test for the installed goods and equipment shall also be the responsibility and at the cost of the Supplier.
18.	**Resolution of Disputes**: The dispute resolution mechanism to be applied pursuant shall be as follows: • In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director, Indian Institute of Technology Delhi and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.
19.	**Applicable Law:** The place of jurisdiction would be New Delhi (Delhi) INDIA.
20.	**Right to Use Defective Goods:** If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.
21.	**Supplier Integrity:** The Supplier is responsible for and obliged to conduct all contracted activities in accordance with the Contract using state of the art methods and economic principles and exercising all means available to achieve the performance specified in the contract.
22.	**Training:** The Supplier is required to provide training to the designated Purchaser's technical and end user personnel to enable them to effectively operate the total equipment.
23.	**Installation & Demonstration:** The supplier is required to done the installation and demonstration of the equipment within one month of the arrival of materials at the IITD site of installation, otherwise the penalty clause will be the same as per the supply of materials. In case of any mishappening/damage to equipment and supplies during the carriage of supplies from the origin of equipment to the installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience. IITD will not be liable to any type of losses in any form.
24.	**Insurance:** For delivery of goods at the purchaser's premises, the insurance shall be obtained by the supplier in an amount equal to 110% of the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks and Strikes. The insurance shall be valid for a period of not less than 3 months after installation and commissioning.
25.	**Incidental services:** The incidental services also include: • Furnishing of 01 set of detailed operations & maintenance manual. • Arranging the shifting/moving of the item to their location of final installation within IITD premises at the

	cost of Supplier through their Indian representatives.
26.	**Warranty**: (i) Warranty period shall be (as stated at page #2 of this tender) from date of installation of Goods at the IITD site of installation. The Supplier shall, in addition, comply with the performance and/or consumption guarantees specified under the contract. If for reasons attributable to the Supplier, these guarantees are not attained in whole or in part, the Supplier shall at its discretion make such changes, modifications, and/or additions to the Goods or any part thereof as may be necessary in order to attain the contractual guarantees specified in the Contract at its own cost and expense and to carry out further performance tests. The warranty should be comprehensive on site. (ii) The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty. Upon receipt of such notice, the Supplier shall immediately within in 02 days arrange to repair or replace the defective goods or parts thereof free of cost at the ultimate destination. The Supplier shall take over the replaced parts/goods at the time of their replacement. No claim whatsoever shall lie on the Purchaser for the replaced parts/goods thereafter. The period for correction of defects in the warranty period is 02 days. If the supplier having been notified fails to remedy the defects within 02 days, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expenses and without prejudice to any other rights, which the purchaser may have against the supplier under the contract. (iii) The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned. The comprehensive warranty will commence from the date of the satisfactory installation/commissioning of the equipment against the defect of any manufacturing, workmanship and poor quality of the components. (iv) After the warranty period is over, Annual Maintenance Contract (AMC)/Comprehensive Maintenance Contract (CMC) up to next two years should be started. The AMC/CMC charges will not be included in computing the total cost of the equipment.
27.	**Governing Language:** The contract shall be written in English language. English language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the same language.
28.	**Applicable Law:** The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction.
29.	**Notices:** • Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by email and confirmed in writing to the other party's address. • A notice shall be effective when delivered or on the notice's effective date, whichever is later.
30.	**Taxes:** Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser. However, GST etc, in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order. For research purpose(s) **ONLY**, 5% GST will be applicable with concessional GST Certificate.
31.	**Duties:** IIT Delhi is exempted from paying custom duty under notification No.51/96 (partially or full) and necessary "Custom Duty Exemption Certificate" can be issued after providing following information and Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute, (no certificate will be issued to third party): The procured product should be used for teaching, scientific and research work only. a) Shipping details i.e. Master Airway Bill No. and House Airway No. (if exists) b) Forwarder details i.e. Name, Contact No., etc. IIT Delhi is partially exempted from paying GST and necessary GST Exemption Certificate will be provided for which following information are required. b) Quotation with details of Basic Price, Rate, Tax & Amount on which ED is applicable c) Supply Order Copy d) Proforma-Invoice Copy.

32.	**Payment**: 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at IITD in good condition and to the entire satisfaction of the Purchaser and on production of unconditional performance bank guarantee as specified in Clause 8 of tender terms and conditions.
33.	**User list:** Brochure detailing technical specifications and performance, list of industrial and educational establishments where the items enquired have been supplied must be provided. (Ref. Annexure-III)
34.	**Manuals and Drawings:** (i) Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals. These shall be in such details as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications. (ii) The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract. (iii) Unless and otherwise agreed, the goods equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawing have been supplied to the Purchaser.
35.	**Application Specialist**: The Tenderer should mention in the Techno-Commercial bid the availability and names of Application Specialist and Service Engineers in the nearest regional office. (Ref. to Annexure-III)
36.	**Site Preparation**: The supplier shall inform to the Institute about the site preparation, if any, needed for the installation of equipment, immediately after the receipt of the purchase order. The supplier must provide complete details regarding space and all the other infrastructural requirements needed for the equipment, which the Institute should arrange before the arrival of the equipment to ensure its timely installation and smooth operation thereafter. The supplier shall visit the Institute and see the site where the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.
37.	**Spare Parts** The Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier: ii. Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and iii. In the event of termination of production of the spare parts: iv. Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and v. Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested. Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods, such as gaskets, plugs, washers, belts etc. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order.
38.	**Defective Equipment**: If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, un-merchantable or not in accordance with the description/specification or otherwise faulty, the committee will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Tenderer with 18% interest if such payments for such equipment have already been made. All damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the supplier. Defective part in equipment, if found before installation and/or during warranty period, shall be replaced within 45 days on receipt of the intimation from this office at the cost and risk of supplier including all other charges. In case supplier fails to replace above item as per above terms & conditions, IIT Delhi may consider "Banning" the supplier.
39.	**Termination for Default:** The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part: i. If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the order, or within any extension thereof granted by the Purchaser; or ii If the Supplier fails to perform any other obligation(s) under the Contract. iii If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in

	competing for or in executing the Contract. • For the purpose of this Clause: i. "**Corrupt practice**" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. ii. "**Fraudulent practice**" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition;'" • In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue the performance of the Contract to the extent not terminated.
40.	**Downtime:** During the warranty period not more than 5% downtime will be permissible. For every day exceeding permissible downtime, penalty of 1/365 of the 5% item value will be imposed. Downtime will be counted from the date and time of the filing of complaint with in the business hours.
41.	**Training of Personnel:** The supplier shall be required to undertake to provide the technical training to the personnel involved in the use of the equipment at the Institute premises, immediately after completing the installation of the equipment for a minimum period of one week at the supplier's cost.
42.	**Disputes and Jurisdiction**: Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within New Delhi.
43.	**Compliancy certificate**: This certificate must be provided indicating conformity to the technical specifications. (Annexure-I)
44.	**As per Ministry of Finance, Deptt. of Expenditure, Public Procurement Division Order (Public Procurement No.1) issued from file No.6/18/2019-PPD dated 23rd July, 2020** regarding Restrictions under Rule 144 (xi) of the General Financial Rules (GFRs) 2017, it is directed that any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with the Competent Authority i.e. the Deptt. for Promotion of Industry and Internal Trade (DPIIT). *The said order will not apply to bidders from those countries (even sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects (updated lists of the countries are given in the Ministry of External Affairs)* "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participated in a procurement process. "Bidders from a country which shares a land border with India" for the purpose of this Order means: i. An entity incorporated, established or registered in such a country; or ii. A subsidiary of an entity incorporated, established or registered in such a country; or ii. An entity substantially controlled through entities incorporated, established or registered in such a country; or *v.* An entity whose *beneficial owner* is situated in such a country; or *v.* An Indian (or other) agent of such an entity; or *vi.* A natural person who is the citizen of such a country; or *ii.* A consortium or joint venture where any member of the consortium or joint venture falls under any of the above The *beneficial owner* for the purpose of 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 exercise control through other means. Explanation- a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent of share or capital or profit of the company; b. "Control" shall include the right to appoint majority of the directors or to control the management of 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 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. An agent is a person employed to do any act for another, or to represent another in dealings with the third person. For Works contracts, including Turnkey contracts, 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. **A certificate shall be submitted by bidders in the tender documents regarding their compliance with the said order**. If the certificate submitted by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law. Annexure VI (For Goods/ Services contracts)/ *Annexure VII (For Works contracts, including Turnkey contracts)*
45	**It is mandatory for bidders to quote items having local content minimum 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017, No. P-45021/2/2017-PP (B.E-II) dated 16.09.2020 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India. (Submit duly filled Annexure VIII for the same). *The Annexure VIII once submitted in the Technical Bid will be final. Submission of Revised Annexure VIII will NOT be accepted.***

ANNEXURE-I

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

Specification	Master Node / Login Node Qty 02	COMPLIANCE Y/N
Specifications Form Factor/Height	1U rack server	
Processors	2 × Intel Xeon Gold 5320T 20C 150W 2.3GHz Processor	
Memory	24x DIMM slots, should support Intel® Optane™ DC Persistent Memory; 2933 MHz/ 3200MHz TruDDR4 , should be configured with 12 x 16 GB DDR4, Should support ECCSDDC ,Memory mirroring,Memory rank sparing,Patrol scrubbing,Demand scrubbin	
Expansion Slots	Up to 4x PCIe 3.0	
Drive Bays	Should support upto 10 x SFF hot swap bays or 10 x NVME drives. Should be supplied with 2 x M.2 boot drive 480 GB SSD (RAID 1)	
HBA/RAID Support	HW RAID (up to 10 drives with flash cache), should support RAID0,1,5,6 with 1Gb cache	
Security and Availability Features	Availability Features, TPM 1.2/2.0; PFA; hot-swap/redundant drives, fans, and PSUs; 45°C continuous operation; light path diagnostic LEDs; front-access diagnostics via dedicated USB port	
Network Interface	2-port 1GbE , 1x dedicated 1GbE management port , 1 x 100Gbps Mellanox EDR/Intel OPA,	
Power (Energy Star 2.0 compliant)	2x hot swap redundant 80 PLUS Platinum;	
Systems Management	Remote GUI managemnet tool to Gather and viewing system information and inventory, Monitor system status and health, alert notification, update system firmware, real time serevr power usage monitoring, capture video display content when Operating system is in hand condition. Can be integrated as single GUI for managemnt of other devices of same OEM like storage, switches etc.	
Regulatory compliance	FCC, UL/CSA,VCCI, CCC,IEC,CERoHS, Energy star 2.1	
Specs	Compute Nodes Qty 25	
Specifications Form Factor/Height	1U rack server	

Processors	2 × Intel Xeon Gold 5320T 20C 150W 2.3GHz Processor	
Memory	24x DIMM slots, should support Intel® Optane™ DC Persistent Memory; 2933 MHz/ 3200 MHz TruDDR4 , should be configured with 12 x 16 GB DDR4,.Should support ECC SDDC ,Memory mirroring,Memory rank sparing,Patrol scrubbing,Demand scrubbin	
Expansion Slots	Up to 4x PCIe 3.0	
Drive Bays	Should support upto 10 x SFF hot swap bays or 10 x NVME drives. Should be supplied with 2 x M.2 boot drive 480 GB SSD (RAID 1)	
HBA/RAID Support	HW RAID (up to 10 drives with flash cache), should support RAID0,1,5,6 with 1Gb cache	
Security and Availability Features	Availability Features, TPM 1.2/2.0; PFA; hot-swap/redundant drives, fans, and PSUs; 45°C continuous operation; light path diagnostic LEDs; front-access diagnostics via dedicated USB port	
Network Interface	2-port 1GbE , 1x dedicated 1GbE management port , 1 x 100Gbps Mellanox EDR/Intel OPA,	
Power (Energy Star 2.0 compliant)	2x hot swap redundant 80 PLUS Platinum;	
Systems Management	Remote GUI managemnet tool to Gather and viewing system information and inventory, Monitor system status and health, alert notification, update system firmware, real time serevr power usage monitoring, capture video display content when Operating system is in hand condition. Can be integrated as single GUI for managemnt of other devices of same OEM like storage, switches etc.	
Regulatory compliance	FCC, UL/CSA,VCCI, CCC,IEC,CERoHS, Energy star 2.1	
	High Memory Node Specification QTY :15	
Specifications Form Factor/Height	1U rack server	
Processors	2 × Intel Xeon Gold 5320T 20C 150W 2.3GHz Processor	
Memory	24x DIMM slots, should support Intel® Optane™ DC Persistent Memory; 2933 MHz/ 3200 MHz TruDDR4 , should be configured with 12 x 32 GB DDR4,.Should support ECC SDDC ,Memory mirroring,Memory rank sparing,Patrol scrubbing,Demand scrubbin	
Expansion Slots	Up to 4x PCIe 3.0	
Drive Bays	Should support upto 10 x SFF hot swap bays or 10 x NVME drives. Should be supplied with 2 x M.2 boot drive 480 GB SSD (RAID 1)	

HBA/RAID Support	HW RAID (up to 10 drives with flash cache), should support RAID0,1,5,6 with 1Gb cache	
Security and Availability Features	Availability Features, TPM 1.2/2.0; PFA; hot-swap/redundant drives, fans, and PSUs; 45°C continuous operation; light path diagnostic LEDs; front-access diagnostics via dedicated USB port	
Network Interface	2-port 1GbE , 1x dedicated 1GbE management port , 1 x 100Gbps Mellanox EDR/Intel OPA,	
Power (Energy Star 2.0 compliant)	2x hot swap redundant 80 PLUS Platinum;	
Systems Management	Remote GUI managemnet tool to Gather and viewing system information and inventory, Monitor system status and health, alert notification, update system firmware, real time serevr power usage monitoring, capture video display content when Operating system is in hand condition. Can be integrated as single GUI for managemnt of other devices of same OEM like storage, switches etc.	
Regulatory compliance	FCC, UL/CSA,VCCI, CCC,IEC,CERoHS, Energy star 2.1	

Storage with parallel File system for scratch / application data space - 100 TB		
Feature	**PFS Storage**	
Storage Quality Certification	The Storage OEM should be established in the Gartner Leader Quadrant	
Storage Controller	The Storage box should be based on multiple controllers with Data Assurance in active-active mode configured in a NSPOF and End-to-End Data Protection.	
Cache required	The system should have minimum 128 GB cache memory across the two controllers with an ability to protect data on cache if there is a controller failure or power outage. The cache on the storage should have 72hrs or more battery backup (OR) should have destaging capabilty to either flash/disk. The system should also offer extended cache based on SSD.	
Drive Support	The system must support intermixing of SSD , SAS and NL-SAS/SATA drives to meet the capacity and performance requirements of the applications.	
Protocols	The storage should be configured with IB protocol on storage controller (natively) itself. Any hardware/software required for this functionality shall be supplied along with it in No Single Point Of Faliure mode. System should support SAS, NVMe-FC, IISER, ISCSI, FC protocol & connectivity.	
RAID configuration	Should support various RAID levels 0, 10, 5, 6.	

Storage Capacity	150 on RAID 6 with 8D+2P using 4 TB NLSAS or lower size disk and scalable to 1PB of usable capacity within same storage in similar configuration and disk capacity.	
Drive Support	The system must support intermixing of SSD , SAS and NL-SAS dual ported drives to meet the capacity and performance requirements of the applications. The system must support a minimum of a 450 disks per two controllers for scalability purpose and must use every drive, up the supported count of drives per pool, spreading out all volumes across all drives and also decrease the drive rebuild time.	
Front-End and Backend connectivity	The proposed storage system should have minimum 4 numbers of 12Gbs or higher backend SAS ports, 2 numbers 100G IB ports available per controller (IB ports should be available directly on storage controllers). Should support 25GbE ISCSI.	
Rack Mountable	The storage should be supplied with rack mount kit. All the necessary patch cords (Ethernet / IB/Fiber) shall be provided and installed by the vendor.	
Storage functionality and Availability	The storage shall have the ability to expand LUNS/Volumes on the storage online and instantly.	
	The storage shall have the ability to create logical volumes without physical capacity being available or in other words system should allow over-provisioning of the capacity. The license required for the same shall be supplied for the maximum supported capacity of the offered storage model.	
	The proposed storage system should be configured to provide data protection against two simultaneous drive failures.	
	The required number hard disks for parity & spares, should be provided exclusively of the usable capacity mentioned after consider RAID and Filesystem overhead.	
	Storage system should allow chaging of cache block size non-dsruptively for defined RAID group levels to meet various kind of workload.	
	Storage shall have capability to integerate with Object Storage for taking image or file based backup.	
	System should have redundant hot swappable components like controllers, disks, power supplies, fans etc.	
	The Storage System should support T10-PI standard to detects and corrects data integrity issues received from the recording server or due to hardware failures on the drives.	
	System should support asynchronous and synchronous replication. System shpould be configured with Asynchronous replication license.	

	System Management software should have capability to monitor perfromance for IOPs, MB/s, latency and should be able to drill down to the capabilities of monitoring controllers, disk pools, volumes, drives.	
	System GUI manager should be able to manage multiple arrays together. Should support Role-based access control and audit log, support for Multi-factor Authentication	
	Storage system should support SSD cache.	
	Storage should have Energy star rated Platinum power supplies.	
	The proposed system should support 99.999% reliability.	
Point-in-times images	The storage should have the requisite licenses to create point-in-time snapshots. The storage should support minimum 2048 snapshots per system.The license proposed should be for the complete supported capacity of the system.	
	Offered storage array shall have capability to take snapshot. Must use latest stable technology platform, with support available for next 7 years.	
	The system should support instant creation of clones of active data.	
Management	Easy to use GUI based administration interface for configuration, storage management and performance analysis tools. The proposed storage should provide Proactive monitoring of the health of the system and configurable automated delivery of replacement drives when failures occur.	
OS support	Support for industry-leading Operating System platforms including: LINUX , Microsoft Windows, HP-UX, SUN Solaris, IBM-AIX, etc. It shall support connecting hosts over iSCSI or FC and shall be supplied with any Multipathing software, if required, with the solution.	
PFS	Open source BeeGFS / Lustre should be offered as Parallel File system	
I/O servers	Minimum 4 x I/O servers (2 for Meta data and 2 for Object data) should be offered in HA,as per the required config to achieve the 5 GB/s throughput, connectivity between I/O servers for object data and storage should be on 100G IB and also connectivity between I/O servers and HPC cluster should be on 100G IB.	
Metadata	Additional 2% of usable Metadata space should be offered on SSD drives on separate storage controller pair or same controller pair. Backend connectivity to storage should be on SAS 12 G or FC 16 G in redundancy.	
Perfromance	Storage with file system should deliver 5 GB / s write throughput from one pair of controller. IOR benchmark report should be submitted along with tender.	

Warranty & SLA	The Hardware and software quoted should have 3 years support alongwith upgrade and updates. Hardware support should include NBD spare part delivery.	
	Unified storage for user space	
Storage Quality Certification	The Storage OEM should be established in the Gartner Leader Quadrant	
Storage Controller	The Storage system should a unified system supporting all Block and File protocols scaling to at least 16 controllers in the same cluster in active-active configuration.	
Cache required	The unified system should have minimum 64 GB data cache post protection overheads across supplied controllers with an ability to protect data on cache if there is a controller failure or power outage. Cache should be protected for Writes either through a battery backup or by destaging to flash/disk.	
Drive Support	The unified system must support intermixing of SSD , SAS and SATA drives to meet the capacity and performance requirements of the applications. The system must support a minimum of 140 disks in a dual controller architecture and shuld support scale out architecture	
Protocols	The storage should a true unified storage configured with iSCSI, FC, FCOE, NFS(NFSv3,NFSv4, NFSv4.1) SMB(,SMB2 & SMB3) , S3 and pNFS protocols for use with different applications and should support the maximum capacity offered by the storage system. Any hardware/software required for this functionality shall be supplied along with it in No Single Point Of Failure mode.	
RAID configuration	Should support RAID 6 or equivalent (dual disk protection in a RAID group)	
High Availability	The unified storage system must be configured to continuously serve data in event of any controller failure. In addition to this, it must also be possible to withstand failure of any 2 or 3 disks per RAID-Group of size not more than 28 disks. In Event, architecture uses a single pool instead of multiple RAID Groups, system should be resilient against failure of three drives for every 28 drives used in the pool	
Storage Capacity	100TB usable in RAID 6 / equivalent .Storage must supplied with 12TB or less usable capacity on highest available NL-SAS Disk with appropriate RAID Group	
Front-End and Backend connectivity Rack Mountable	The proposed unified storage system should have minimum 4 x 10GigE Copper Ports for host connectivity per controller/node. Single controller/node of storage system should offer 40 Gbps of aggregate bandwidth for disk drive connectivity. The unified storage should be supplied with rack mount kit. All the necessary patch cords (Ethernet and Fiber) shall be provided.	

Rack Mountable	The unified storage should be supplied with rack mount kit. All the necessary patch cords (Ethernet and Fiber) shall be provided.	
Storage Scalability and Upgradability	1. The unified proposed system should be field upgradeable to a higher model through data-in-place upgrades. 2. The unified Storage should be a true scale-out architecture allowing mixing of Controller/Nodes within same product line with higher configurations. 3. Unified Storage system should allow re-usage of Disk Shelves with higher models of the same product line.	
Storage functionality	The unified storage shall have the ability to expand LUNS/Volumes on the storage online and instantly.	
	The unified storage shall have the ability to create logical volumes without physical capacity being available or in other words system should allow over-provisioning of the capacity. The license required for the same shall be supplied for the maximum supported capacity of the offered storage model.	
	The unified storage should be configured with Quality of Service feature for IOPs/Throughput for both Block and File.	
	The unified storage shall support logical partitioning of controllers in future such that each partition appears as a separate Virtual storage in itself for both block and file.	
	The storage should support data tiering with real-time movement of hot data to high performing drives. It should offer the capability to move data between one tier of drives to another tier of drives.	
	The proposed unified storage system should be configured to provide data protection against two simultaneous drive failures.	
	The required number hard disks for parity & spares, should be provided exclusively of the usable capacity mentioned.	
	Unified System should have redundant hot swappable components like controllers, disks, power supplies, fans etc.	
Point-in-times images	The unified storage should have the requisite licenses to create point-in-time snapshots. The storage should support minimum 250 snapshots per volume/LUN. The license proposed should be for the complete supported capacity of the unified system for both block and file.	
	The unified system should support instant creation of clones of active data, with near zero performance impact for both block and file.	
Encryption for Data At Rest	The proposed storage array must support data at rest encryption offering industry standard certification/compliance. The storage array should support data at rest encryption using self encrypting	

	drives or controller based functionality there by not impacting performance.	
Management	Single management, easy to use GUI based and web enabled administration interface for configuration, storage management and performance analysis tools for both block and file.	
Remote Support & Diagnostics	"Storage management should support ""Call home"" facility with web based self service portal providing an integrated, efficient monitoring and reporting capability and supporting data collection. Management software should provide features like: 1. Automated call home feature 2. Nonintrusive alerting 3. Performance and Capacity reports 4. Ongoing health check analysis"	
OS support	"Support for industry-leading Operating System platforms including: LINUX , Microsoft Windows, HP-UX, SUN Solaris, IBM-AIX, etc. Any Multipathing software required for the solution must be supplied for unlimited host connectivity"	
De-Duplication, Compression and Compaction	Proposed unified storage should support Iline as well As Post Process block level data de-duplication,compression and compactio for all kinds of data (structured & unstructured) on both block and file.	
Upgrade Protection	The system proposed should be latest prevailing model,and the proposed model should be supported by OEM atleast for 5 years from the date of announcement of end of sale with 4 hour part replacement guarantee	
Warranty & SLA	The Hardware and software quoted should have 3 years support along with upgrade and updates.	
Interconnect		
Primary	100% Non blocking architecture	
	Mellanox HDR with required no. of ports in 100% non blocking architecture	
	Required no. ports with cables should be offered in Fat tree topology with 100% NON BLOCKING ARCHITECTURE	
	5 additional ports should be offered.	
Secondary	Gigabit Ethernet switch with required no. of port with required cables of appropriate lenghth should be offered. If two switches are offered then 2 x 10G SFP+ uplink port should be poffered with cables for switch interconnect	
Cluster manager software		
Management	Server OEM supported/Bidder supported cluster manager software	
	Must support both GPU and CPU based hybrid cluster	

	Software should be capable of provisioning and managing the cluster	
	Cluster should support High Availability (HA) feature	
	Customize Network and Compute Node profile through GUI or command prompt.	
	Must support user account management from the master node	
Job scheduler		
	Open source bidder supported	
	Application integration support	
	resource-aware and topology-aware scheduling	
	Support of job submission through CLI/GUI	
Job scheduler	GPU Aware scheduling	
	1 month manpower + 1 week training+ Implementation	

Design Requirements / Scope of work

S. No	Description of Requirements	
1	**Scope of Work**	
1.1	This specification covers intelligent integrated/inbuilt infrastructure, standalone system design, engineering, manufacture, assembly, testing at manufacturer's works, supply, delivery at site, unloading, handling, proper storage at site, erection, testing and commissioning at site of complete infrastructure for the proposed Data Centre as detailed in the specification, complete with all accessories required for efficient and trouble free operations	
1.2	Modular and scalable design for power and cooling : All the components used to design the system should be redundant and in the Events of failure the components can be maintained easily. All the components of the infrastructure should be such that it can be easily dismantled and Relocated to different location	
2	**Requirements**	
2.1	Integrated Data Center Infrastructure Solution **(hereafter referred as 'Smart DC Solution')** with Prefabricated Cold and Hot aisle containment of 02 racks should cater IT load of minimum 35 kVA	

2.2	The Intelligent Integrated Infrastructure essentially includes internal redundant or backup power supplies, environmental controls (e.g., precision air conditioning, fire suppression, smoke detection, water leak detection, humidity sensor, intelligent monitoring system, security devices, etc.) Air-conditioning system is to have 100 % reliability on 24 x 7 basis with adequate standby for system redundancy. (Failure of any single unit; still to meet the total cooling requirement). The ambient temperature considered for the calculation of total tonnage requirement should be 45 Degrees	
2.3	The detail specifications of the DC Solution, standalone system shall be in adherence to standard Data Centre guidelines thus shall be composed of multiple active power and cooling distribution paths, but only one path active. Shall have redundant components.	
3	Solution shall have following components: -	
3.1	In-Row closed loop Air-Conditioning	
3.1.1	Data center server and network racks should be equipped with cooling units to provide closed loop precision cooling system which should be able to cool the equipment's uniformly right from 1st U to 42nd U of Rack through Row/Rack Based Cooling	
3.1.2	Precision Air Cooling solution should be of 35kW capacity with standby (N+N Redundancy) Precision Air Conditioner should have following Features: 1. Cooling System should be DX (Variable capacity/Digital Scroll) type. 2. Inbuilt Heater and Humidifier to cater IT load up to 35kVA 3. Outdoor Unit & Microprocessor based Controller	
3.2	UPS System	
3.2.1	UPS should be of 40 kVA in N+ N topology, rack mountable with pf up to 0.9 and efficiency up to 95%. Other features of UPS system are as follows: 1. True On-line UPS with Widest input range (305V-477V) 2. Double conversion and IGBT technology: Full IGBT Rectifier /Battery Charger and IGBT based Inverter 3. Facility for remote monitoring 4. N+N redundancy should be provided.	

3.3	Power Distribution	
3.3.1	rack PDU with 18nos of IEC C13 Sockets & 6 nos of IEC C19 Socket with 2.5 mtr power chord with 32A , 3 Phase MCB (each rack having two PDU's)	
3.4	Main Electrical Panel and Cabling	
3.4.1	DB panel should be mounted on to utility rack with all internal cabling integrated into the same. Essential MCB/MCCB should be provided with electrical system. All the PDUs inside all racks should be connected by the UPS. DB panel mounted on Utility rack shall be covered with Novec 1230 Gas based fire suppression system.	
3.5	Fire Detection and Suppression	
3.5.1	Fire detection and suppression system should be mounted in panel adjacent to Smart Racks to avoid consumption of any usable U space an In-rack built-in feature of solution. It should have Fire alarm and fire suppression unit and the fire suppression agent should be NOVEC 1230 Gas as per NFPA guidelines.	
3.6	Environmental Controls	
3.6.1	Smart Racks should include basic environmental controls: • Smoke Detector • Water Leak Detection system • Temperature/ Humidity Sensor • Door Sensor • Alarm beacon	
3.7	Racks and U Space	
3.7.1	2 Nos. of 42 U racks of dimension 600 mm x 1000 mm	
3.7.2	Solution should have Min 75 U (total) space available for IT and network equipment. (UPS internal & Battery External)	
3.7.3	Blanking Panel: 70% each for all the supplied Racks.	
3.8	Monitoring	
3.8.1	Each set of Integrated racks should have IP based monitoring facility of all the passive parameters inside racks.	
3.8.2	Capable for sending Email Alerts	

3.8.3	Monitoring unit should occupy maximum 1 U space of rack height		
3.9	Other features:		
3.9.1	The Intelligent integrated infrastructure would provide much functionality and some of the key functionalities are – Both Cold aisle & hot aisle containment should be of minimum 300mm each for airflow, Air tight Thermally insulated cabinet, remote Management.		
3.9.2	Rack based Biometric access control system provided should be controlled by common access control panel with access control for both front as well as rear doors. IP based Access control with user exclusive authentication.		
3.9.3	Critical Component's for Integrated Server Racks system (Rack, rack PDU, Cooling, UPS and monitoring system) should be from same & single OEM for Seamless Integration & better Service Supports		
3.9.4	Electrical Distribution board within Utility Cabinet to have fire detection & Novec Based Fire Suppression system		
3.9.5	Status based LED Lights within Smart Racks		
3.9.6	9"LCD touch screen HMI display for environmental parameters , menu driven user interface & instantaneous PUE display.		
3.9.7	Single Source Electrical Panel with Energy Meter compatible to HMI for real time Power Usage Monitoring.		

PRODUCT TECHNICAL SPECIFICATIONS

1	**Uninterrupted Power Supply (UPS) System**		
2	**General Description:**		
3	Supply, install, test and commissioning of true online, double conversion, high efficiency, and high power factor Uninterruptible Power Systems (UPS) rated at 2 x 40 KVA with battery backup support for combined 30 minutes on full load. UPS shall be rack mountable & The backup batteries should be supplied with the necessary arrangements to mount outside the cabinet.		
4	Configuration: 2 x 40kVA (N+N Redundancy)		
5	**Scope**		
	The scope shall include design,		

	supply, installation, testing and commissioning of the complete UPS system and related accessories including: • All Server racks will get power feed from two independent 40 KVA UPS systems to ensure redundancy. • All systems should be tested in factory as per the manufactures recommended procedure for all operating parameters and the test results should be provided during the installation. • Delivery at site, unloading, handling, installation of complete system including interconnection from the UPS system to batteries and to input / output panels switches. All interconnections shall be done using multi-strand Flexible Copper conductor cables of appropriate sizes. • Scope includes battery bank connections and providing safety barriers for all bus bars and cable connection leads on battery racks. • Energizing of UPS and Battery bank commissioning. • UPS control parameters setting and complete testing of system on load. • Service backup by engineer till system is fully operational and subsequently training is to be provided to the concerned persons. • Any upgrade of the system hardware and associated other software during the warranty period should be supplied at free of charge. • Acceptance tests will be carried out after installation and the systems will be taken over only after successful completion of the acceptance tests. • Operation and service manuals of the systems containing technical / Electronic drawings / circuit diagrams complete in all respects should be		

	supplied.		
7	**Specification / features of the Each UPS system are as follows:** • Widest input range. • Double conversion and IGBT technology. • Full IGBT Rectifier / Battery charger • IGBT based Inverter • Batteries to support combined 30minutes full load backup. • Power distribution panels • Facility for remote viewing		
8	**UPS other technical specification**		
	General		
	UPS type	ON-LINE	
	Model Name	Bidder to Specify	
	Rating (VA/W)	40,000 VA / 36,000 W	
	Make	Bidder to Specify	
	Technology	IGBT with PWM Switching	
	Crest Factor	3:1	
	Double Conversion efficiency	94.9 %	
	Eco mode efficiency	98.5 %	
9	**Input Ratings**		
	Nominal Input Voltage	380/400/415V (3-phase ,4 Wire)	
	Permissible input voltage variation at full load	305 V – 477 VAC	
	Nominal input frequency	50 Hz	
	Permissible input frequencies variation	40 Hz to 70 Hz	
	Input power factor at full load	> 0.99 at full load	
	Input Current distortion with linear load	< 4%	
10	**Output Ratings**		

	Nominal output voltage	380/400/415V (3-phase with Neutral)	
	Voltage Precision	1%	
	Nominal output frequency	50Hz	
	Frequency Precision	0.25%	
	Over load capability	105%-125%; 5 Mins, 125%-150%; 1Min	
	Steady state voltage stability	±1% for balanced three phase load; ±2% for unbalanced load	
	Total voltage harmonic distortion	2% (0 ~ 100% linear load); 5% (0 ~ 100% non-linear load)	
	Load Crest Factor	3:1 Comply with IEC 62040-3	
	Output Power Factor	0.9	
11	**Bypass**		
	Voltage Range	+15% -20%	
	Frequency	50/ 60Hz	
	Frequency Range	+/-20%	
12	**BATTERY PARAMETERS**		
	Type	SMF	
	No. of battery blocks	32-40	
	Battery nominal voltage	12V	
	Battery Voltage	384-480Vdc	
13	**ENVIRONMENTAL PARAMETERS**		
	Operating temperature	0 to 40 deg. Centigrade	
	Relative Humidity	5-95% without Condensation	
	Altitude	1000 meters	
	Temperature de-rating	30-40deg de-rating	
	Altitude de-rating	derate power by 1% per 100m when above 1000m)	
	Noise level	<58db	
14	**MECHANICAL PARAMETERS**		

	Height X width X Depth (MM)	Bidder to specify	
	Weight	Bidder to specify	
	Ventilation	Forced - Air cooled	
	Cable Entry	terminal block	
	Color / Panel finish	EG7021	
15	**STANDARDS**		
	Safety	IEC/EN62040-1-1	
	Electromagnetic Compatibility	IEC/EN62040-1-2, IEC/EN61000-3-11, IEC/EN61000-3-12, YD/T1095-2008	
	Surge Protection	IEC/EN62040-2, meeting IEC/EN61000-4-5	
	Protection	IP20	
16	**COMMUNICATION & MONITORING SOFTWARE**	USB/Intelligent Slot (Dry Contact Card/ Modbus Card/ RS 485 Card)	
17	**Installation and Configuration**		
	1. The entire system shall be installed as per manufacturer's recommendations & instructions including all interconnections for supply & control circuits. 2. All components shall be clearly identified using labels including battery cells individually. 3. Services of authorized representative or manufacturer for supervision of installation, connections, testing, & adjustments shall be provided.		
18	**Testing and Commissioning**		
	1. Under supervision of manufacturer's representative all system functions, operations, protective features shall be checked & pre-set to ensure compliance or specifications. 2. Test the system as per recommendations & test listed below using pre-calibrated instruments. 3. Simulation of malfunctions to verify		

	protective device operations. 4. Duration of supply on emergency. Low battery voltage alarm & shutdown, transfer & restoration of normal supply. 5. Remote status & alarm tests. 6. In case of test any shortfalls / faults, the same shall be rectified & test procedure shall be again repeated to establish satisfactory performance		
19	**Precision Air Conditioning System of 35kW Capacity**		
20	**Configuration**		
	Supply, installation, testing and commissioning of DX Type floor mount Row Based Air-conditioning units designed specifically for high sensible heat ratio with variable cooling technique to match the low latent loads of systems to be installed adjacent to cabinet for effective and uniform distribution of cooling. It shall be specifically designed for service from the front and rear of the unit. The unit shall be capable to be mounted between the racks or at the end of row. The unit shall modulate cooling capacity and airflow based on requirements.		
21	**Direct Expansion**		
	Cooling Circuits • *One refrigeration circuit, incorporating a high efficiency, fully hermetic variable capacity compressor with crankcase heater, safety valve, filter drier, moisture indicating sight glass, liquid line solenoid valve and an externally equalized expansion valve* • Each compressor is equipped with pre-set highand low pressure switches for protection against high condensing and low evaporating temperatures. The low pressure switch features an automatic reset (with an adjustable delay for winter start-up). • The unit shall be provided with additional protection against high ambient temperature. When the		

	temperature goes over the design conditions, the unit remains in operation with partial load (20% decrease against required). If such protection is not sufficient High Pressure switch shall generate an high pressure alarm and the unit shuts down - manual reset shall be required • The inclined evaporator coil is manufactured from copper tubes, mechanically bonded to hydrophilic painted aluminum fins, with a stainless-steel condensate drain pan. The large face area/low velocity coil allows precise control of temperature and humidity* during cooling and dehumidification and is designed to optimize fluid velocity and minimize pressure drop The moisture indicating sight glass, liquid line solenoid valve and expansion valve for each circuit are mounted in a service compartment, isolated from the air stream, to allow checking and adjustment while the unit is in operation.		
22	**Fan Section** *• Units is offered with two plug EC Direct Drive Fan, High efficiency, external rotor electronically commutated (EC) motor with integrated electronics, True soft start characteristics (inrush protection, short circuit of motor output. Fans are IP54 current lower than operating current), Backward curve, corrosion resistant fan wheel, Maintenance free design and construction. The fan section shall be designed for higher air flow. The fan shall be protected over temperature of motor, electronics, locked rotor, Protection class F*		
23	**Cabinet and Frame** • The unit shall be powder painted panels with ½" (or 10mm) insulation. A hinged control access panel opens to a second front panel which is a protection enclosure for high voltage components. The frame is painted with a		

	powder coat finish to protect against corrosion. The unit is totally front and rear accessible including any component removal.		
24	**Air Filtration** • The filter cells are made of two deep pleated 4" filters rated MERV8 following ASHRAE 52.2 (45% by ASHRAE 52.1) or G4 following EN779, located within the cabinet, and accessible from the rear of the unit. Frame of the filter shall be made of GI/Aluminium. • *Clogged filter alarm must be available for standard.*		
25	**Refrigerant** • *All units equipped with direct expansion circuit are suitable for R410A refrigerant.*		
26	***Microprocessor Controller*** • *Air conditioning models should be controlled by microprocessor based controller. It can be programmed to control the function of every device within the unit via I/O* • *The controller shall allow setting and monitoring of the room parameters. Unit utilizes multiple temperature sensors placed at the rack inlet, to ensure management and control of temperature by rack.* • The controller should allow setting and monitoring of the following space parameters: o Air inlet Temperature o Air supply Temperature (remote sensors at rack inlet) o Return Temperature set-point o Supply Temperature set-point o Return Temperature band o Supply Temperature band o Humidity (inlet) o Humidity set-point o Humidity band o Rack Min, Max and Average temperature • The example of available warnings / alarms: o High supply temperature, Low supply temperature o High return humidity Low return humidity o Loss of airflow o Compressor Low Pressure,		

	Compressor High Pressure ○ Electrical heater high temperature (When applicable) ○ Clogged filter, Customer input (No 4 inputs) ○ LP transducer fail, Call service (customer input) ○ High temperature (customer input) ○ Unit hours exceeded ○ Compressor hours exceed ○ Humidifier hours exceed ○ Supply sensor failure ○ Network failure ○ Humidifier problem ○ Digital scroll high temperature ○ Smoke detected ○ Fire alarm ○ Rack sensor failure		
	• *Following features should be incorporated in the controller:* ○ Status Report of the latest 400 event-messages of the unit. ○ Input for remote on-off and volt-free contacts for simple remote monitoring of low and high priority alarms: high/low temperature, high/low refrigerant pressure, fan/control failure, compressor/control failure and others are available ○ LAN management: functions provided as standard include stand- by (in case of failure of the unit in operation, the second one starts automatically), and automatic rotation *Automatic restart must be provided after a power failure*		
27	**Monitoring** 1. There should be SNMP and HTTP/Web-management capability for enhanced communications and control of HPM systems. The cards make use of an Ethernet network (100Mbit/1Gbit) to monitor and control a wide range of operating parameters, alarms and notifications to a standard web browser (Internet Explorer). *2. The unit shall also include input volt-free contacts for simple*		

	remote monitoring of low and high priority alarms: high/low temperature, high/low refrigerant pressure, fan/control failure, compressor/control failure and others are available.		
28	**Condenser** • The condenser should be with fan speed controller designed & set for usages of R410A refrigerant. Condenser should work at 0 deg C to 45 deg C ambient temperature. The motorized fan shall be IP54, protection class F		
29	**Humidifier** *• The unit is fitted with a canister type steam humidifier suitable for use with water of varying degrees of hardness, provided that the water is not treated or demineralized (Conductivity range 125-500□S/cm). The humidifier is complete with a water inlet valve, water outlet valve and a maximum water level sensor, disposable cylinder, steam distributor and electronic controls. Humidifier control is of the ON-OFF type, can be also disabled by remote contact Humidifier is removable from the rear of the cabinet*		
30	*Racks & Accessories*		
	Rack Containment Frame is 42 U, 19" mounting type with standard Rack + Cold & Hot Aisle Containment of minimum 300 mm each		
	Rack frame is, scalable and modular with safe load carrying capacity of 1000 Kg		
	Color shade of Rack is RAL 7021		
	Base plinth with 100 mm height		
	Cable entry provision from top & bottom both side of rack		
	Cut outs with rubber grommet on top and bottom cover of rack for cable entry		
	OEM Cable manager on both LHS & RHS on		

	rear side		
	Front glass door for complete 42U height visibility & Rear Split Steel door		
	Thermally insulated cold aisle chamber		
	Blanking panels to prevent air mixing		
	Fixed Shelf to be provided with each rack		
	Plastic Cable duct on vertical LH & RH section of racks for cable routing		
	Front Rack doors to be provided with Biometric Access Control with 02 nos. of Electromagnetic lock per door		
	Gas spring to be provided on front doors of racks		
	Status based LED light to be provided on each rack		
	Each rack enclosure should be physically separated through caged partition at cold & hot aisle to avoid unauthorized access from one rack to another.		
30	*Safety and Security Systems*		
	Fire Alarm and Fire Suppression System The integrated infrastructure solution should be designed as a complete stand-alone unit with security, fire detection and fire suppression systems. Each of the systems is inter-operable and inter connected. Environmentally friendly NOVEC 1230 agent should be used to ensure that no harm to human beings and environment is caused. Following systems should be installed. 1) NOVEC 1230 Clean Agent for fire suppression system 2) Fire detection and alarm systems, with detectors and panel. 3) Protected area: The entire volume of the server racks along with electrical DB inside utility cabinet shall be protected with fire detection and fire suppression system. The doors should be secured by Access Control system. 4) The NOVEC 1230 system shall be		

	designed and installed as per NFPA 2001-2012 Edition. SMPV, Petroleum and Safety Explosives Organization (PESO) approved cylinder filled with NOVEC 1230 is installed.		
31	*Rodent Repellent System*		
	The proposed Smart Racks/cabinets should be covered by Rodent Repellent System.		
32	**Biometric Based Access Control**		
	The IP based Access Control System shall be used to serve the objective of allowing access to authorized personnel only. The system deployed will be based on Biometric Technology. The front & rear rack doors will be provided with magnetic locks, and will operate on fail-safe principle through one common Biometric access control system. The system would be designed and implemented to provide following functionality: • Configurable system for user defined access • Built-in Real Time Clock (RTC), calendar; complete Database stored locally and shall be capable of operating offline on standalone mode • Record, report and archive each and every activity (permission granted and / or rejected) with log formats • Fail safe operation in case of no-power condition and abnormal condition such as fire, theft, intrusion, loss of access control, etc. *• At the biometric reader, user presents the finger to the biometric reader which is unique to each employee. The pattern is read and compared with stored data to grant / deny access*		
33	**Remote Monitoring**		
	Supply and installation 1U rack mountable monitoring system with Sensors & notification system. The system shall continuously collect critical information from network connected devices such as, temperature & humidity sensors,		

	Water Leak sensor and other dry contact monitoring. Beacon & Buzzer-Sound and Flash Led Alarm. Based on pre-set parameters, automated email alerts are sent to the intended recipients and mobile app-based monitoring.		
	1) Intelligent Rack environment remote monitoring		
	2) Modbus 485 Communications		
	3) SNMP Communication		
	4) Single window for monitoring all sensors		
	5) Data and logs of historical information of alarms and notification		
	6) Temperature & Humidity Sensor, Door Sensor, WLD Sensor, Smoke Detection sensor. Alarm device with LED flash and sound option		
34	**HMI – Smart Racks Graphical Interface**		
	Smart Racks should have functionality to graphically monitor the passive infrastructure ---- 1) 9-inch wide touch screen HMI display with a very user-friendly interface 2) It should be menu driven system, Thermal management, Power supply environmental quantities, alarms, logs, and provided a total of menu items, breakdown of the sub-menu item the next menu level, 3) First authorization on LCD, is only authorized once, authorized system will automatically skip the authorization page while booting 4) System Configuration page includes integrated cabinet configuration 5) Home page presents system function information (Such as Date & Time ex.), system performance parameters and critical system parameters		

35	**System performance parameters**: a) Enclosures: thermal path average temperature, the IT load cabinet single cabinet (configured for an intelligent PDU). b) Air conditioning: return air temperature, supply air temperature c) All the components (Intelligent PDUs ext.) shall be graphically represented on HMI. d) Real time PUE monitoring.		
36	**Critical system parameters:** a) UPS operation: AC mode/bypass mode/Battery mode/standby mode, The system load factor b) HVAC Operation – Animated fan during Run & Compressor status display IT racks parameters – Temp. & Humidity Parameters are highlighted for normal & abnormal values		
37	**Thermal Management:** a) Return air temperature profile cross-ordinate b) cooling fan state to the operating state, the corresponding icon is animated; alarm flood state is, icon animation. Door status icon static display, the door opened and closed the door to a different style static icon.		
38	***Supply & Distribution:*** f) UPS page displays for the distribution parameters and real-time power system operating mode g) UPS working state: AC mode / bypass mode / Battery mode / standby mode h) The operating state of the system: Single / 1 + 1 parallel / 2N double bus i) For each PDU distribution -PDU page displays the total current and power component j) when the PDU voltage value, the current value exceeds the set range, the system will generate a corresponding alarm; on the contrary, the alarm disappears		

39	**Environmental Amount: (The amount of ambient acquisition)** a) acquisition and display status of the current environmental data amount of the rack, comprising: a real-time value of the respective collection point temperature and humidity sensors, front and rear door state, hot/cold aisles average temperature curve moisture profile b) When the air conditioning is working properly, hot and cold airflow patterns dynamic channel is turned on when the air conditioning is not working, dynamic airflow patterns hot and cold aisles disappear c) Door status icon static display, the door opened and closed the door to a different style static icon d) when the passage of hot / cold temperature and humidity sensor measured value exceeds the set range, the system will generate a corresponding alarm; conversely, when the hot / cold aisles temperature and humidity sensor measurement range is set to fall the alarm disappears		
40	**Warning – Alarm-Current Alarm:** a) Displays the Current Alarms Page b) The current alarm is divided into emergency alarms, major alarms and general alarms c) When the current alarms and buzzers system in the normal mode, the LCD buzzer will sound an alarm, and for 5 minutes, the duration of the latest alarm generation time from a timer In maintenance mode, the buzzer will not sound an alarm. After the lifting of maintenance mode, buzzer return to normal mode		
41	**Alarm - historical alarm:** a) Alarm History page provides a display system and screening history alarms b) LCD page provides only historical records up to 100 within the system		

	one week. For longer or more the number of alarm history, Web pages can be viewed in alarm management		
42	**Cleaning**		
	1) On completion of installation, testing of the system all components, cabinets etc. shall be cleaned & unwanted material, debris shall be removed from site 2) Scratches dents if any shall be cleaned & touched up to match the original finish 3) Cable and electric wire should be arranged in a way that minimize the physical tempering with the existing infrastructure and should be properly managed maintaining the aesthetics		
43	**Maintenance and Support**		
	After Sale Service 1. Service shall be guaranteed by supplier during defect liability period / guarantee period. 2. Product OEM shall offer the Data Centre with 24 x 7 services through their authorized service engineer for a period of at least 1 year. 3. Product OEM shall provide ON SITE warranty for from the date of taking over of the equipment after the acceptance tests. 4. Basic training and operational training to be provided after the successful installation of DC 5. Quarterly PM to be carried out during the warranty period.		

MINIMUM ELIGIBILITY CRITERIA FOR OEM

Proposals not complying with minimum eligibility criteria, as enumerated below, will be rejected and will not be considered for evaluation of technical bid. The proposal should adhere to the following minimum eligibility criteria:

The OEM / partner should be in the HPC business for the last 5 years in India and should have fully operational office from min 5-years. Please submit documentary evidence for the same. Critical Component's for Integrated Server Racks system (Rack, Cooling, UPS, rack PDU and monitoring system) should be from same & single OEM for Seamless Integration & better Service Supports. OEM Service Support for Major Equipment's: OEM or Manufacturer should have its own service centre.	
The OEM must have manufacturing and Engineering facility in India for cooling solutions of Data Center. OEM or Manufacturer should be ISO 9001: 2000, ISO 14001, ISO/IEC 27001:2013 and ISO 45001 certified.	
Both OEM & Bidder must have spares center/warehouse/support office in New-Delhi for support services. The OEM should have at least three qualified and experienced DC certified professionals like CDCP/CDCS/CDCE/ATD on their company payroll with minimum 3 years' experience in Data Centre designing and implementation.	
The Source of all items shall be either from our country or from the countries who have a good heritage on cyber security and amicable to our country.	
The OEM will be responsible for supply, installation, configuration, commissioning, testing, maintenance and support for both hardware and software during the warranty period.	
The Order quantity may increase/ decrease as per the discretion of IIT-Delhi.	
Bidder should be financially sound to execute the order i.e. Bidder should have annual turnover of average of Rs. 10Crore in last three Financial Year.	
OEM should have a registered office in India from last five years.	
Bidder should be an overall profitable organization from last three financial year.	
The institutes reserves the right of accepting or rejecting any quotation without assigning any reason thereof.	
Warranty should be 3 years parts, 3 years labour, 3 years onsite Support.	
Delivery period should not be more than 8 weeks.	
Quotation must be valid for atleast 60 days.	
Your quotation should contain Authorization Letter from OEM.	
The bid should be submitted in two bid system i.e. Technical Bid and Financial Bid.	
Bidder should provide power and cooling requirement in their technical bid.	
Terms and conditions should be clearly mentioned in the technical Bid.	
It is mandatory for bidders to quote items having local content minimum 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017, No. P-45021/2/2017-PP (B.EII) dated 16.09.2020 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India. (Submit duly filled Annexure VIII for the same). The Annexure VIII once submitted in the Technical Bid will be final. Submission of Revised Annexure VIII will NOT be accepted.	
Compute OEM should have minimum 5 entries in latest Top 500 susper computer list Top500.org.	
Storage OEM should be in Gartner Leader Quadrant	

OEM should have physical presence in India with registered service & sales office in India since last 3 years	
Severs supplied should be with factory integrated.	
OEM should have net positive worth for last 2 years.	

I have also enclosed all relevant documents in support of my claims, (as above) in the following pages.

Signature of Bidder

Name: _____

Designation: _____

Organization Name: _____

Contact No. : _____

ANNEXURE-II

<< Organization Letter Head >>

DECLARATION SHEET

We, _____ hereby certify that all the information and data furnished by our organization with regard to this tender specification are true and complete to the best of our knowledge. I have gone through the specification, conditions and stipulations in details and agree to comply with the requirements and intent of specification.

This is certified that our organization has been authorized (Copy attached) by the OEM to participate in Tender. We further certified that our organization meets all the conditions of eligibility criteria laid down in this tender document. Moreover, OEM has agreed to support on regular basis with technology / product updates and extend support for the warranty.

The prices quoted in the financial bids are subsidized due to academic discount given to IIT Delhi.

We, further specifically certify that our organization has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.	NAME & ADDRESS OF THE Vendor/ Manufacturer / Agent
1. Phone	
2. Fax	
3. E-mail	
4. Contact Person Name	
5. Mobile Number	
6. GST Number	
7. PAN Number	
(In case of on-line payment of Tender Fees) 8. UTR No. (For Tender Fee)	
9. Kindly provide bank details of the bidder in the following format: a) Name of the Bank	
b) Account Number	

(Signature of the Tenderer)

Name: _____

Seal of the Company

Annexure-III

List of Govt. Organization/Deptt.

List of Government Organizations for whom the Bidder has undertaken such work during last three years (must be supported with work orders)		
Name of the organization	**Name of Contact Person**	**Contact No.**

Name of application specialist / Service Engineer who have the technical competency to handle and support the quoted product during the warranty period.		
Name of the organization	**Name of Contact Person**	**Contact No.**

Signature of Bidder

Name: _____

Designation: _____

Organization Name: _____

Contact No. : _____

PREVIOUS SUPPLY ORDER DETAILS

Annexure - IV

Name of the Firm_____

Order placed by (Full address of Purchaser)	Order No. and Date	Description and quantity of order equipment	Value of order	Date of Completion of delivery as per contract	Has the equipment been installed satisfactorily (Attach a Certificate from the Purchaser/ Consignee)	Contact person along with Telephone No., Fax No. and email address)

Signature and Seal of the Manufacturer/ Bidder

_____

Place: _____

Date: _____

ORIGINAL EQUIPMENT MANUFACTURER (OEM)
Manufacturing authorisation form (MAF)
(On Letter Head of Manufacturer)

ANNEXURE-V (Revised)

Tender No. :- …… Date:- ……..

To
The Director,
Indian Institute of Technology Delhi,
New Delhi- 110016

Dear Sir,

We manufactures of original equipment at (……..address of factory……) do hereby authorize M/s *(Name and address of Agent)* to submit a bid, negotiate and receive the order format against your tender enquiry.

M/s. …….. is authorized to bid and conclude the contract in regard to this business.

We hereby extend our full guarantee and warranty as per clause …… of the terms and conditions NIQ for the goods and services offered by the above firm.

Yours Faithfully,

(Name)

(Name & Seal of Manufactures)

Note: -

1. **Items of indigenous nature or quoted in INR**, more than 1 authorized representative may participate in the same tender and submit their bids on behalf of their OEM/Principal/Manufacturer if the OEM permits more than one authorized bidder in such case as per their policy.

2. **In cases of agents quoting in offshore procurements,** on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. **One manufacturer can also authorize only one agent/dealer**

3. The letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to bind the manufacturer. The same should be included by the bidder in its techno-commercial unpriced bid.

<On Organization Letter Head>

(ANNEXURE-VI)
(For Goods/ Services Contracts)

No._____ Dated:_____

CERTIFICATE

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that this bidder is not from such a country.

OR (whichever is applicable)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that this bidder is from _____(*Name of Country*) and has been registered with the Competent Authority. I also certify that this bidder fulfills all the requirements in this regard and is eligible to be considered.

(Copy/ evidence of valid registration by the Competent Authority is to be attached)

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

Contact No. : _____

<On Organization Letter Head>

(ANNEXURE-VII)

(For Works Contracts, including Turnkey contracts)

No._____ Dated:_____

CERTIFICATE

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries and hereby certify that this bidder is not from such a country and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority.

OR (whichever is applicable)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries and hereby certify that this bidder is from _____(*Name of Country*) and has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I also certify that this bidder fulfills all the requirements in this regard and is eligible to be considered.

(Copy/ evidence of valid registration by the Competent Authority is to be attached)

Signature of Bidder/ Agent

Name: _____

Designation: _____

Organization Name: _____

Contact No. : _____

(ANNEXURE-VIII)

DECLARATION OF LOCAL CONTENT

(To be given on Company Letter Head – For tender value below Rs.10 Crores)
(To be given by Statutory Auditor/ Cost Auditor/ Cost Accountant/ CA for tender value above Rs.10 Crores)

To,
The Director,
Indian Institute of Technology Delhi
New Delhi-110016

Subject: - Declaration of Local Content

Tender Reference No:_____

Name of Tender/ Work: _____

1. Country of Origin of Goods being offered:_____
2. We hereby declare that items offered has _____% local content

"Local Content" means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of the imported content in the item (including all customs duties) as a proportion of the total value, in percent.

"*False declaration will be in breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law."

Yours faithfully,

(Signature of the bidder, with Official Seal)

Note: It is mandatory for bidders to quote items having local content minimum 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017, No. P-45021/2/2017-PP (B.E-II) dated 16.09.2020 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India. (Submit duly filled Annexure VIII for the same). *The Annexure VIII once submitted in the Technical Bid will be final. Submission of Revised Annexure VIII will NOT be accepted.*

(ANNEXURE-IX)

BID SECURITY UNDERTAKING

(To be issued by the bidder on company's letterhead in lieu of EMD)

To,

The Registrar,
I.I.T. Delhi, Hauz Khas,
Delhi – 110016.

We, M/s _____ (Name of the Firm), with ref. to Tender No._____ dated_____ hereby undertake that:

1. We accept all terms and conditions of the tender document.
2. We accept that, we will not modify our bid during the bid validity period and will honour the contract after the award of contract.
3. In the event of any modification to our bid by us or failure on our part to honour the contract after final award, our firm may be debarred from participation in any tender/ contract notified by IIT Delhi for a period of one year.

Yours faithfully,

(signature)
Name:
Date:
Office Seal:

BID SUBMISSION

Online Bid Submission:

The Online bids (complete in all respect) must be uploaded online in **two** Envelops as explained below: -

Envelope – 1 (Following documents to be provided as single PDF file)			
Sl. No.	**Document**	**Content**	**File Types**
1.	Technical Bid	Compliance Sheet (Annexure - I)	.PDF
2.		Organization Declaration (Annexure - II)	.PDF
3.		List of organizations/ clients where the same products have been supplied (in last two years) along with their contact number(s). (Annexure-III)	.PDF
4.		Technical supporting documents in support of all claims made at Annexure-I	.PDF
5.		Previous Supply Order (Annexure - IV)	.PDF
6.		Original Equipment Manufacturing Manufacturing Authorization Form (MAF) (Annexure – V)	.PDF
7.		*(For Goods/ Services Contracts)* Certificate - Bidder Not from/ from Country sharing Land border with India & Registration of Bidder with Competent Authority (Annexure-VI)	.PDF
8.		*(For Works Contracts, including Turnkey Contracts)* Certificate – Bidder Not from/ from Country sharing Land border with India, Registration of Bidder with Competent Authority & not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority (Annexure-VII)	.PDF
9.		Declaration of Local Content (Annexure-VIII)	.PDF
10.		Bid Security Undertaking in lieu of EMD (Annexure-IX)	.PDF
Envelope – 2			
Sl. No.	**Document**	**Content**	
1.	Financial Bid	Price bid should be submitted in given BOQ_XXXX.xls format. (***Note: -Comparison of prices will be done ONLY on the bids submitted for the Main Equipment and anything asked as 'Optional' in the specs is not to be included for overall comparison.)*** Bids for optional items are to be submitted in 'sheet2_Quote for optional items'	.XLS