



भारत सरकार/GOVERNMENT OF INDIA  
अंतरिक्ष विभाग/DEPARTMENT OF SPACE  
इसरो दूरमिति अनुवर्तन तथा आदेश संचारजाल (इस्ट्रैक)  
ISRO TELEMETRY TRACKING AND COMMAND NETWORK (ISTRAC)  
प्लॉट सं. 12 व 13, 3<sup>rd</sup> मेन, 2<sup>nd</sup> फेज/Plot No. 12 & 13, 3<sup>rd</sup> Main, 2<sup>nd</sup> Phase  
पीण्या औद्योगिक क्षेत्र, बेंगलूर/PEENYA INDUSTRIAL AREA, BANGALORE -560 058

ई-प्रापण निविदा सं. इस्ट्रैक/क्रय/2019ई0169201 का शुद्धिपत्र सं. 01  
**CORRIGENDUM NO.1 TO e-PROCUREMENT TENDER NO. ISTRAC/PURC/2019E0169201**

Against our Tender No. **ISTRAC/PURC/2019E0169201 (TWO PART) FOR SERVERS**, please note the following:

In place of		To be read as	
SI No	Description	SI No	Description
			<b>Add: Annexure-1 to the tender</b>

निविदाकर्ताओं से अनुरोध है कि उपर्युक्त को नोट करें तथा तदनुसार प्रस्ताव प्रस्तुत करें। संबंधित वेब लिंक <https://eprocure.isro.gov.in> है। Tenderers are requested to note the above and submit offers accordingly. The concerned web link is <https://eprocure.isro.gov.in>

दिनांक/Date: 03.05.2019

ह/Sd/-  
वरि. क्रय एवं भण्डार अधिकारी/ Sr. Purchase & Stores Officer

## Annexure-1

### Specifications for Servers

Spec Ref	Description
1.	<b>Configuration A</b>
1.1	<ul style="list-style-type: none"> <li>a) Physical – Server shall be 19-inch rack mountable server of 1U or 2U height.</li> <li>b) Servers shall be offered with required rack mount hardware kit.</li> <li>c) Processor – One Intel E-2174G or above processor shall be quoted, if better processor model is quoted, vendor shall ensure that base frequency and core requirements are either equal or better.</li> <li>d) Processor Clock: 3.8 GHz base frequency or better processor clock shall be quoted</li> <li>e) Processor Cores: 4 Cores or more</li> <li>f) Processor cache: 8 MB Smart cache or more</li> <li>g) Memory – 8GB X 4 (32GB) DDR4-2666 or better ECC Registered memory or better memory configuration.</li> <li>h) Internal Storage – 2 No's of 2TB 7.2K RPM NL SAS 12Gbps Drives in RAID 1 configuration shall be quoted</li> <li>i) <b>Failed HDD shall not be returned back during warranty replacement</b></li> <li>j) <b>Vendor shall quote for only RHEL certified hardware with a support for RHEL 7.2 or above. All the required device drivers for RHEL shall be included in the offer.</b></li> <li>k) Vendor shall also quote for Red Hat Enterprise Linux Server Edition 7.6 Operating System or above with a minimum 1 year of support.</li> <li>l) Drive Controller – 12G SAS controller with RAID 1/0</li> <li>m) Optical Drive – Internal or External DVD RW drive to be offered</li> <li>n) Network Ports: Server shall be offered with minimum 4 No's of 1Gb copper Ethernet ports</li> <li>o) Ports – Minimum USB=02, VGA=01</li> <li>p) <b>Serial Port: Server shall have minimum 1 Serial port</b></li> <li>q) Power –Hot Plugable redundant power supply. Power supply with 80% or better efficiency, Power Supply rating: 220 volt/50 Hz.</li> <li>r) Vendor shall provide IEC-C13-C14 power cables</li> <li>s) Vendor shall also quote for additional Indian type 3 Pin Power cords.</li> <li>t) Management - Server shall include IPMI 2.0 compliant management module.</li> <li>u) Management function shall be offered on out of band over Ethernet.</li> <li>v) Management functionalities (viz., power off, power on, reboot, System health monitoring, and remote media mount and software installation) should be possible to be carried out using the offered management module.</li> <li>w) Cooling – Server shall be configured with cooling fans.</li> </ul>

	<p>x) Certification – RoHS or equivalent to be provided by vendor.</p>
2	<p><b>Configuration B : Windows Based Server</b></p>
2.1	<p>a) Physical – Server shall be 19-inch rack mountable server of 1U or 2U height.</p> <p>b) Servers shall be offered with required rack mount hardware kit.</p> <p>c) Processor – One Intel E-2174G or above processor shall be quoted, if better processor model is quoted, vendor shall ensure that base frequency and core requirements are either equal or better.</p> <p>d) Processor Clock: 3.8 GHz base frequency or better processor clock shall be quoted</p> <p>e) Processor Cores: 4 Cores or more</p> <p>f) Processor cache: 8 MB Smart cache or more</p> <p>g) Memory – 8GB X 4 (32GB) DDR4-2666 or better ECC Registered memory or better memory configuration.</p> <p>h) Internal Storage – 2 No’s of 2TB 7.2K RPM NL SAS 12Gbps Drives in RAID 1 configuration shall be quoted</p> <p>i) <b>Failed HDD shall not be returned back during warranty replacement</b></p> <p>j) Vendor shall quote for Windows Certified Hardware.</p> <p>k) <b>Vendor shall also quote for Windows Server 2016 Standard Edition or above OS with a minimum 1 year of Software assurance subscription.</b></p> <p>l) Drive Controller – 12G SAS controller with RAID 1/0</p> <p>m) Optical Drive – Internal or External DVD RW drive to be offered</p> <p>n) Network Ports: Server shall have minimum 4 No’s of 1Gb copper Ethernet ports</p> <p>o) Ports – Minimum USB: 02, VGA=01</p> <p>p) <b>Serial Port: Server shall have minimum 1 Serial port</b></p> <p>q) Power –Hot plugable redundant power supply. Power supply with 80% or better efficiency, Power Supply rating: 220 volt/50 Hz.</p> <p>r) Vendor shall provide IEC-C13-C14 power cables</p> <p>s) Vendor shall also quote for additional Indian type 3 Pin Power cords.</p> <p>t) Management - Server shall include IPMI 2.0 compliant management module. Management function shall be offered on out of band over Ethernet.</p> <p>u) Management functionalities (viz., power off, power on, reboot, System health monitoring, and remote media mount and software installation) should be possible to be carried out using the offered management module.</p> <p>v) Cooling – Server shall be configured with cooling fans.</p> <p>w) Certification – RoHS or equivalent to be provided by vendor.</p>
3	<p><b>Configuration C :</b></p>

3.1	<ul style="list-style-type: none"> <li>a) Physical – 19-ich rack mountable server of 1U or 2U.</li> <li>b) Servers shall be offered with required rack mount hardware kit</li> <li>c) Processor – Two Intel Gold 6126 or above processor shall be quoted, if better processor model is quoted, vendor shall ensure that base frequency and core requirements are either equal or better.</li> <li>d) Processor Clock: 2.6 GHz base frequency or better processor shall be quoted</li> <li>e) Processor Cores: 12 Cores or more per processor</li> <li>f) Processor L3 cache: 18 MB or more smart-cache</li> <li>g) Memory – Vendor shall quote for 8 GB X 6 (48 GB) DDR4-2666 or better ECC Registered memory per processor</li> <li>h) Memory slots – 24 DIMM slots</li> <li>i) Internal OS Storage – Two No’s of 600GB 10K RPM SAS 12Gbps Disks in RAID 1 Configuration and</li> <li>j) Internal Data Storage- Two No’s of 2.4TB 10K RPM SAS 12Gbps Drives in RAID 1 configuration shall be quoted</li> <li>k) <b>Failed HDD shall not be returned back during warranty replacement</b></li> <li>l) Vendor shall also quote for Red Hat Enterprise Linux Server Edition 7.6 or above with a minimum 1 year of support</li> <li>m) Vendor shall quote for only RHEL certified hardware with a support for RHEL 7.2 or above. All the required device drivers for RHEL shall be included in the offer.</li> <li>n) Drive Controller – 12G SAS controller with RAID 0/1</li> <li>o) Optical Drive – Internal or External DVD RW drive to be offered</li> <li>p) Network Ports: Server shall have minimum 4 No’s of 1Gb copper Ethernet ports</li> <li>q) Ports – Minimum USB:02, VGA=01</li> <li>r) Power –Hot Plugable redundant power supply. Power supply with 80% or better efficiency, Power Supply rating: 220 volt/50 Hz. Vendor shall provide IEC-C13-C14 power cables along with additional Indian type 3 Pin Power cords.</li> <li>s) Management - Server shall include IPMI 2.0 compliant management module. Management function shall be offered on out of band over Ethernet.</li> <li>t) Management functionalities (viz., power off, power on, reboot, System health monitoring, and remote media mount and software installation) should be possible to be carried out using the offered management module.</li> <li>u) Cooling – Server shall be configured with redundant cooling fans.</li> <li>v) Certification – RoHS or equivalent to be provided by vendor.</li> </ul>
4	<b>Configuration D:</b>
4.1	<ul style="list-style-type: none"> <li>I. Physical – 19-ich rack mountable server Chassis of 2U. Chassis shall be offered with required rack mount hardware kit.</li> <li>II. Server System which is density-optimized, Server chassis should be offered of max 2U which support for up to 4 x ½ U hot plug servers</li> </ul>

	<p>III. Servers should be independently serviceable</p> <p>IV. Power and Cooling - The chassis / enclosure should be configured with redundant fans and Platinum power supplies in N+N configuration.</p> <p>V. Power supply shall be able to support all 4 servers running at 100% in N + N redundant configuration</p> <p>VI. Each Chassis shall be supplied with 1 X 4TB USB External Hard Disk with USB 3.0 Interface and 1 X 16GB USB 3.0 Flash/USB Drive for installation of OS.</p> <p>VII. Chassis shall allow management via dedicated out-of-band management interface.</p> <p>VIII. <b>Chassis should be loaded with 4 Half U servers with following configuration</b></p> <ul style="list-style-type: none"> <li>a) Processor – Two Intel Gold 6126 or above processor shall be quoted, if better processor model is quoted, vendor shall ensure that base frequency and core requirements are either equal or better.</li> <li>b) Processor Clock: 2.6 GHz base frequency or better processor shall be quoted</li> <li>c) Processor Cores: 12 Cores or more</li> <li>d) Processor L3 cache: 16 MB or more</li> <li>e) Memory – 16GB X 6 (96 GB) DDR4-2666 or better ECC Registered memory or better memory configuration per CPU shall be quoted</li> <li>f) Disks- 5 No’s of 1.92TB SSD SAS 12Gbps Drives in RAID 5 configuration shall be quoted</li> <li>g) <b>Failed HDD shall not be returned back during warranty replacement</b></li> <li>h) Vendor shall also quote for Red Hat Enterprise Linux Server Edition 7.5 or above with a minimum 1 year of support</li> <li>i) Vendor shall quote for only RHEL certified hardware with a support for RHEL 7.2 or above. All the required device drivers for RHEL shall be included in the offer.</li> <li>j) Drive Controller – 12G SAS controller with RAID 1/5 Support with battery backup</li> <li>k) Network Ports: Server shall have minimum 4 No’s of 1Gb copper Ethernet ports</li> <li>l) 10G Network Ports: Server shall have minimum 2 Nos of 10Gb Fiber ports</li> <li>m) Vendor shall quote for suitable SFP/Adaptors for 10G ports</li> <li>n) Ports : USB:02, VGA=01 either internal or external through cable</li> <li>o) Certification – RoHS or equivalent to be provided by vendor</li> </ul>
5	<b>Config E:</b>
5.1	<ul style="list-style-type: none"> <li>a) Physical – 19-ich rack mountable server of 1U or 2U.</li> <li>b) Servers shall be offered with required rack mount hardware kit</li> <li>c) Processor – One Intel Silver 4114 or above processor shall be quoted, if better processor model is quoted, vendor shall ensure that base frequency and core requirements are either equal or better.</li> <li>d) Processor Clock: 2.2 GHz base frequency or better processor shall be quoted</li> </ul>

	<ul style="list-style-type: none"> <li>e) Processor Cores: 10 Cores or more</li> <li>f) Processor L3 cache: 13 MB or more</li> <li>g) Memory – 16GB X 6 (96 GB) DDR4-2666 or better ECC Registered memory or better memory configuration per processor shall be quoted</li> <li>h) Memory slots – 24 DIMM slots</li> <li>i) Internal Storage – 2 No’s of 900GB 15K RPM SAS 12Gbps Drives in RAID 1 configuration shall be quoted</li> <li>j) <b>Failed HDD shall not be returned back during warranty replacement</b></li> <li>k) Vendor shall quote for only RHEL certified hardware with a support for RHEL 7.2 or above. All the required device drivers for RHEL shall be included in the offer.</li> <li>l) Drive Controller – 12G SAS controller with RAID 1 Support</li> <li>m) Optical Drive – Internal or External DVD RW drive to be offered</li> <li>n) Network Ports: Server shall have minimum 4 No’s of 1Gb copper Ethernet ports</li> <li>o) Ports : Minimum USB:02, VGA=1</li> <li>p) Power –Hot Pluggable redundant power supply. Power supply with 80% or better efficiency, Power Supply rating: 220 volt/50 Hz. Vendor shall provide IEC-C13-C14 power cables along with Indian 3 Pin Power cords.</li> <li>q) Management - Server shall include IPMI 2.0 compliant management module. Management function shall be offered on out of band over Ethernet.</li> <li>r) Management functionalities (viz., power off, power on, reboot, System health monitoring, and remote media mount and software installation) should be possible to be carried out using the offered management module.</li> <li>s) Cooling – Server shall be configured with cooling fans.</li> <li>t) Certification – RoHS or equivalent to be provided by vendor.</li> </ul>
6	<b>Configuration F :</b>
6.1	<ul style="list-style-type: none"> <li>I. Physical – 19-ich rack mountable server Chassis of 2U.</li> <li>II. Chassis shall be offered with required rack mount hardware kit</li> <li>III. Server System which is density-optimized, Server chassis should be offered of max 2U which support for up to 4 x ½ U hot plug servers</li> <li>IV. Servers should be independently serviceable</li> <li>V. Power and Cooling - The chassis / enclosure should be configured with redundant fans and Platinum power supplies in N+N configuration.</li> <li>VI. Power supply should be able to support all 4 servers running at 100% in N + N redundant configuration</li> <li>VII. <b>Chassis should be loaded with 4 Half U servers with following configuration</b> <ul style="list-style-type: none"> <li>a) Processor – One Intel Silver 4116 or above processor shall be quoted, if better processor model is quoted, vendor shall ensure that base frequency and core requirements are either equal or better.</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>b) Processor Clock: 2.1 GHz base frequency or better processor shall be quoted</li> <li>c) Processor Cores: 12 Cores or more</li> <li>d) Processor L3 cache: 16 MB or more</li> <li>e) Memory – 16GB X 6 (96 GB) DDR4-2666 or better ECC Registered memory or better memory configuration per CPU shall be quoted</li> <li>f) Internal Storage – 5 No’s of 900GB 15K RPM SAS 12Gbps Drives in RAID 5 configuration shall be quoted</li> <li>g) <b>Failed HDD shall not be returned back during warranty replacement</b></li> <li>h) Vendor shall quote for only RHEL certified hardware with a support for RHEL 7.2 or above. All the required device drivers for RHEL shall be included in the offer.</li> <li>i) Drive Controller – 12G SAS controller with RAID 5 Support</li> <li>j) Network Ports: Server shall have minimum 4 No’s of 1Gb copper Ethernet ports</li> <li>k) 10G Network Ports: Server shall have minimum 2 10Gb Fiber ports</li> <li>l) Vendor shall quote for suitable SFP/Adaptors for 10G ports</li> <li>m) Ports : Minimum USB: 02, VGA=1 –either internal or external through cable</li> <li>n) Certification – RoHS or equivalent to be provided by vendor</li> </ul>
7	<p><b>Warranty –</b></p> <ul style="list-style-type: none"> <li>a) OEM’s support package for on-site Next Business Day(NBD) comprehensive warranties with advance replacement support for 5 years for servers</li> <li>b) Manufacturers support package for Warranty and technical support only should be quoted. The specific part number for such support should be clearly indicated. Vendor shall not replace manufacturer’s warranty with their own warranty package.</li> <li>c) Warranty should start from the date of acceptance of the full configuration by ISTRAC based on mutually agreed acceptance test criteria.</li> <li>d) Technical Support to cover the following <ul style="list-style-type: none"> <li>• Access to technical support information for resolving problems, configuration issues, utilities etc.</li> <li>• Firmware &amp; device drivers for RHEL.</li> <li>• Access to technical literature relating to the system</li> <li>• Onsite technical support in trouble-shooting</li> </ul> </li> </ul>
8	<p><b>Installation &amp; System Support –</b></p> <ul style="list-style-type: none"> <li>a) Vendor shall deliver, install &amp; commission the systems as per the configuration at ISRO, ISTRAC Bangalore</li> <li>b) The installation shall include unpacking and placement of the systems on console, installation of operating system and required device drivers &amp; system libraries, channel bonding configuration etc.</li> </ul>

	<ul style="list-style-type: none"> <li>c) System installation, commissioning is the sole responsibility of the vendor.</li> <li>d) Vendor shall provide required skilled man-power during system installation and acceptance at ISRO Navigation Center Bangalore</li> <li>e) Vendor shall provide installation and acceptance report as a part of system installation on successful completion of system acceptance by end users.</li> <li>f) At the time of installation and commissioning of the configuration if it is found that some additional hardware accessories or software items with licenses are required to complete the configuration to meet the operational requirement of the configuration which were not included in the vendor's original list of deliverables then vendor is required to supply such items to ensure the completeness of the configuration at no extra cost. Vendor should ensure completeness of the list of deliverables in the offer to avoid such discovery during installation.</li> <li>g) Vendor shall resolve all issues related to compatibility of hardware, drivers, and other system software with RHEL.</li> <li>h) System Support – Vendor shall provide on-call onsite support for the delivered set of systems during the warranty period. The support shall include onsite activities like failed component replacement, operating system &amp; device driver installation and configuration, troubleshooting and raising support call with OEM.</li> <li>i) Vendor shall identify a support engineer in Bangalore who shall attend on call basis onsite support requirements.</li> </ul>
9	<p>Quality Requirements –</p> <ul style="list-style-type: none"> <li>a) The offered servers in all configurations shall be from same OEM</li> <li>b) The design and production of critical subsystems like system motherboard, controllers etc., shall be under the control of manufacturer &amp; international quality certified realization process.</li> <li>c) All subsystems of the system shall have been selected to achieve optimal performance and high reliability.</li> <li>d) The system architecture shall ensure maximum performance for data processing applications. The subsystems, the processor boards, the interconnections among subsystems and the software shall be properly matched to ensure maximum performance.</li> <li>e) Systems shall be only from a proven product line from highly reputed manufacturers. The product line shall be an internationally established brand reputed for high quality and with wide acceptance in deployment for mission critical and business critical functions in the industry.</li> <li>f) The manufacturer of the system shall be in total control of the life cycle (Design, release, support, obsolescence and termination of the critical subsystems like motherboard, controllers etc.,) of the product.</li> </ul>



10	<p><b>Notes to the Vendor –</b></p> <ul style="list-style-type: none"> <li>a) Vendor shall submit following certifications from OEM on OEM’s letter head - <ul style="list-style-type: none"> <li>• The vendor is authorized for participating in the bid</li> <li>• The offered hardware is not an obsolete product</li> <li>• The offered hardware / software components will not reach End of Support for at least <b>Six</b> years from the date of supply</li> <li>• The OEM does not have any objection on retention of failed media during warranty replacements</li> <li>• The offered hardware / software component is back to back supported by the OEM during the warranty period</li> </ul> </li> <li>b) <b>All the above points are mandatory to be in OEM Letter Head</b></li> <li>c) The purchase orders shall be issued for all servers in all configurations only, No partial purchase order meeting specific configuration shall be issued. The order shall be issued in full only.</li> <li>d) For all items in the list of deliverables offered by the vendor, the manufacturer's part number should be clearly indicated. Offer of items without clear specification of part number is not acceptable.</li> <li>e) Vendor should indicate the part nos. of the deliverable items clearly. The part numbers &amp; description of the items in the offer should match the part numbers &amp; description of the items mentioned in the manufacturer's spec sheets.</li> <li>f) The part numbers &amp; description of the goods delivered should match the part numbers &amp; description in the offer.</li> <li>g) Vendor shall ensure that required power cables IEC-C13 or Indian 3-Pin or both shall be provided along with systems as requested by ISTRAC after release of purchase order at no extra cost to ISTRAC</li> <li>h) Vendor should carefully consider all the clauses in the specifications and should ensure that their offer is complete in all respects at the time of submission. Complete technical documentation justifying the compliance should be enclosed along with their offer. Offer which are incomplete are liable to be considered noncompliant.</li> <li>i) Specifications of the major items have been provided in the enclosed document. In case any additional accessories/ software media/licenses are required to complete the configuration for full functionality and/or better manageability vendor should include such hardware accessories and related software elements or plug-ins with licenses in their offer.</li> <li>j) Systems from the manufacturers who primarily assemble systems by getting components/ subsystems from different suppliers and who do not have direct control over the production process/ quality of the items so obtained, will not be acceptable.</li> <li>k) Vendor should provide technical brochure from manufacturer for all subsystems to verify the current status (i.e. when released, whether due for replacement/obsolesce) the specification of the subsystems.</li> </ul>
----	--

	<p>The technical brochure shall give the details not only for the main system but also for all the subsystems and accessories. Technical brochure shall include details of</p> <ul style="list-style-type: none"> <li>• Functional specification.</li> <li>• Hardware &amp; software configuration.</li> <li>• Configuration options.</li> <li>• Electrical &amp; environmental specification.</li> <li>• Safety compliance details.</li> <li>• Physical dimension.</li> <li>• System test report and reliability metric</li> </ul> <p>l) End Usage – The product shall be deployed at ISRO Centers in India for supporting mission requirements</p> <p>m) In case the approval of any Foreign Govt. agency, like US dept. of commerce, is required for the supply of any of the items, vendor should clearly indicate the items requiring such clearance. For such items vendor should obtain strong assurance from the manufacturer regarding their commitment to follow-up through the necessary clearance process. A written assurance to this effect should be enclosed with the technical offer.</p> <p>n) In case of imported items ISTRAC Purchase will provide necessary documents including customs duty exemption certificate 51/96 or equivalent. Vendor has to arrange customs clearance. Concessional customs duty is payable by the vendor and the same will be reimbursed by us against submission of Triplicate copy of Exchange control copy of Bill of entry ( original) and TR6 Challans . However no customs clearance charges, demurrage charges is payable by ISTRAC.</p>
11	<p><b>Checklist for Vendor</b></p> <ol style="list-style-type: none"> <li>1. <b>Manufacturer Authorization form (MAF) for participating in current bid is attached</b></li> <li>2. <b>Manufacturer Authorization form (MAF) as per Section 9 (Notes to Vendor) Subsection a.</b></li> <li>3. <b>Warranty with required part number is provided with 5 Years Next Business Day</b></li> <li>4. <b>Technical Data sheet justifying the compliance is attached</b></li> <li>5. <b>Technical Bill of Material is attached</b></li> <li>6. <b>Commercial Bill of Material is attached</b></li> </ol>