



Administered by
UNIVERSITY OF MAINE SYSTEM
Office of Strategic Procurement

REQUEST FOR PROPOSALS

HIGH PERFORMANCE COMPUTER CLUSTER
University of Maine

RFP # 10-12

ISSUE DATE:
September 22, 2011

PROPOSALS MUST BE RECEIVED BY:
November 3, 2011

DELIVER PROPOSALS TO:

University of Maine System
Office of Strategic Procurement
Attn: Hal Wells
16 Central Street
Bangor, ME 04401

SECTION ONE

1.0 GENERAL INFORMATION:

- 1.1 Purpose: The University of Maine System acting on behalf of the University of Maine is seeking proposals for the provision of a high performance computer cluster as described below.

This Request for Proposals (RFP) states the instructions for submitting proposals, the procedure and criteria by which a vendor may be selected and the contractual terms by which the University intends to govern the relationship between it and the selected vendor.

- 1.2 Definition of Parties: The University of Maine will hereinafter be referred to as the "University." Respondents to the RFP shall be referred to as "Bidder(s)" or "bidder(s)". The Bidder to whom the Contract is awarded shall be referred to as the "Contractor."
- 1.3 Scope: The University envisions opportunities for research organizations, businesses and education around the state to have access to sophisticated computational resources that might otherwise be unobtainable due to cost and a lack of expertise. Cyberinfrastructure Investment for Development, Economic Growth and Research (CIDER) received a grant from the Maine Technology Institute to form the seed of an expandable computing resource dedicated to serving public and private sector organizations. This resource will serve both High Performance Computing (HPC) needs as well as cloud services. Businesses and researchers throughout the state will continue to grow this resource throughout its operational lifetime.

As part of the CIDER project the University is seeking computing hardware suitable for use both as a High Performance Computing (HPC) parallel cluster as well as a cloud service. Proposals that include software to accomplish these goals will be favorably considered. The goal is a high core count general purpose computing environment that can be used for cloud and HPC. This environment includes networking and disk storage as well. The environment must be expandable and modular, i.e., the incremental cost of adding more nodes should be relatively constant. Either Intel or AMD CPUs may be specified, preference will be given to a homogeneous cluster, but a mixture is acceptable. The goal is a system having 512 cores, with half or more suitable for cloud usage and half or more suitable for HPC. All nodes should have a local disk. A centralized Network-Attached Storage (NAS) disk storage unit connected with a high speed network may also be specified.

- 1.4 Evaluation Criteria: Proposals will be evaluated on many criteria deemed to be in the University's best interests, including, but not limited to cluster performance including computing as well as communication time; warranty; price per core; corporate experience designing and building HPC clusters for academic institutions; delivery. Bidders must carefully read this RFP and pay attention to elements that are identified as "will be favorably considered"; "preference will be given to"; "looked at favorably"; "minimally acceptable but higher preferred"; "higher consideration"; "desirable"; "will be used as a metric".
- 1.5 Communication with the University: It is the responsibility of the bidder to inquire about any requirement of this RFP that is not understood. Responses to inquiries, if they change or clarify the RFP in a substantial manner, will be forwarded by addenda to all parties that have received a copy of the RFP. Addenda will also be posted on our web site, www.maine.edu/strategic/upcoming_bids.php. The University will not be bound by oral responses to inquiries or written responses other than addenda.

Inquiries must be made to: Hal Wells
Office of Strategic Procurement
University of Maine System
16 Central Street
Bangor, Maine 04401
(207) 973-3302
hcwells@maine.edu

**WRITTEN INQUIRIES SHALL BE SUBMITTED NO LATER THAN OCTOBER 7, 2011
RESPONSES TO INQUIRIES WILL BE SENT NO LATER THAN OCTOBER 18, 2011**

- 1.6 Award of Proposal: Presentations may be requested of two or more bidders deemed by the University to be the best suited among those submitting proposals on the basis of the selection criteria. After presentations have been conducted, the University may select the bidder which, in its opinion, has made the proposal that is the most responsive and most responsible and may award the Contract to that bidder. The University reserves the right to waive minor irregularities. Scholarships, donations, or gifts to the University, will not be considered in the evaluation of proposals. The University reserves the right to reject any or all proposals, in whole or in part, and is not necessarily bound to accept the lowest cost proposal if that proposal is contrary to the best interests of the University. The University may cancel this Request for Proposals or reject any or all proposals in whole or in part. Should the University determine in its sole discretion that only one bidder is fully qualified, or that one bidder is clearly more qualified than any other under consideration, a contract may be awarded to that bidder without further action.
- 1.7 Award Protest: Bidders may appeal the award decision by submitting a written protest to the University of Maine System's Director of Strategic Procurement within five (5) business days of the date of the award notice, with a copy of the protest to the successful bidder. The protest must contain a statement of the basis for the challenge.
- 1.8 Confidentiality: The information contained in proposals submitted for the University's consideration will be held in confidence until all evaluations are concluded and an award has been made. At that time, the winning proposal will be available for public inspection. Pricing and other information that is an integral part of the offer cannot be considered confidential after an award has been made. The University will honor requests for confidentiality for information of a proprietary nature to the extent allowed by law. Clearly mark any information considered confidential.
- 1.9 Costs of Preparation: Bidder assumes all costs of preparation of the proposal and any presentations necessary to the proposal process.
- 1.10 Debarment: Submission of a signed proposal in response to this solicitation is certification that your firm (or any subcontractor) is not currently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal department or agency. Submission is also agreement that the University will be notified of any change in this status.
- 1.11 Proposal Understanding: By submitting a proposal, the bidder agrees and assures that the specifications are adequate, and the bidder accepts the terms and conditions herein. Any exceptions should be noted in your response.
- 1.12 Proposal Validity: Unless specified otherwise, all proposals shall be valid for ninety (90) days from the due date of the proposal.

- 1.13 Specification Protest Process and Remedies: If a bidder feels that the specifications are written in a way that limits competition, a specification protest may be sent to the Office of Strategic Procurement. Specification Protests will be responded to within five (5) business days of receipt. Determination of protest validity is at the sole discretion of the University. The due date of the proposal may be changed if necessary to allow consideration of the protest and issuance of any necessary addenda. Specification protests shall be presented to the University in writing as soon as identified, but no less than five (5) business days prior to the bid opening date and time. No protest against the award due to the specifications shall be considered after this deadline. Protests shall include the reason for the protest and any proposed changes to the specifications. Protests should be delivered to the Office of Strategic Procurement in sealed envelopes, clearly marked as follows:

SPECIFICATION PROTEST, RFP #10-12

- 1.14 Proposal Submission: A **SIGNED** original and four (4) copies of the proposal must be submitted to the Office of Strategic Procurement, University of Maine System, 16 Central Street, Bangor, Maine 04401, in a sealed envelope by **Thursday, November 3, 2011**, to be date stamped by the Office of Strategic Procurement in order to be considered. Normal business hours are 8:00 a.m. to 5:00 p.m., Monday through Friday. Bidders may wish to check <http://www.maine.edu/alerts/> to determine if University operations have been suspended. Proposals received after the due date will be returned unopened. There will be no public opening of proposals (see Confidentiality clause). In the event of suspended University operations, proposals will be due the next business day. Vendors are strongly encouraged to submit proposals in advance of the due date to avoid the possibility of missing the due date because of unforeseen circumstances. Vendors assume the risk of the methods of dispatch chosen. The University assumes no responsibility for delays caused by any package or mail delivery service. Postmarking by the due date WILL NOT substitute for receipt of proposal. Additional time will not be granted to any single vendor, however additional time may be granted to all vendors when the University determines that circumstances require it. **FAXED OR E-MAIL PROPOSALS WILL NOT BE ACCEPTED.** The envelope must be **clearly** identified on the outside as follows:

Name of Bidder
Address of Bidder
Due Date: November 3, 2011
RFP #10-12

SECTION TWO

2.0 GENERAL TERMS AND CONDITIONS:

- 2.1 **Contract Administration:** The University of Maine's Department of Electrical and Computer Engineering shall be the University's authorized representative in all matters pertaining to the administration of this Contract.
- 2.2 **Contract Documents:** If a separate contract is not written, the Contract entered into by the parties shall consist of the RFP, the signed proposal submitted by the Contractor, the specifications including all modifications thereof, and a purchase order or letter of agreement requiring signatures of the University and the Contractor, all of which shall be referred to collectively as the Contract Documents.
- 2.2 **Contract Modification and Amendment:** The parties may adjust the specific terms of this Contract (except for pricing) where circumstances beyond the control of either party require modification or amendment. Any modification or amendment proposed by the Contractor must be in writing to the Office of Strategic Procurement. Any agreed upon modification or amendment must be in writing and signed by both parties.
- 2.3 **Contract Validity:** In the event one or more clauses of the Contract are declared invalid, void, unenforceable or illegal, that shall not affect the validity of the remaining portions of the Contract.
- 2.4 **Non-Waiver of Defaults:** Any failure of the University to enforce or require the strict keeping and performance of any of the terms and conditions of this Contract shall not constitute a waiver of such terms, conditions, or rights.
- 2.5 **Cancellation/Termination:** If the Contractor defaults in its agreement to provide personnel or equipment to the University's satisfaction, or in any other way fails to provide service in accordance with the contract terms, the University shall promptly notify the Contractor of such default and if adequate correction is not made within ten (10) days, the University may take whatever action it deems necessary to provide alternate services and may, at its option, immediately cancel this Contract with written notice. Except for such cancellation for cause by the University, either the University or the Contractor may terminate this Contract by giving ninety (90) days advance written notice to the other party. Cancellation does not release the Contractor from its obligation to provide goods or services per the terms of the Contract during the notification period.
- 2.6 **Clarification of Responsibilities:** If the Contractor needs clarification of or deviation from the terms of the Contract, it is the Contractor's responsibility to obtain written clarification or approval from the Contract Administrator.
- 2.7 **Litigation:** This Contract and the rights and obligations of the parties hereunder shall be governed by and construed in accordance with the laws of the State of Maine without reference to its conflicts of laws principles. The Contractor agrees that any litigation, action or proceeding arising out of this Contract, shall be instituted in a state court located in the State of Maine.
- 2.8 **Assignment:** Neither party of the Contract shall assign the Contract without the prior written consent of the other, nor shall the Contractor assign any money due or to become due without the prior written consent of the University.

- 2.9 Equal Opportunity: In the execution of the Contract, the Contractor and all subcontractors agree, consistent with University policy, not to discriminate on the grounds of race, color, religion, sex, sexual orientation, including transgender status or gender expression, national origin or citizenship status, age, disability, genetic information, or veteran's status and to provide reasonable accommodations to qualified individuals with disabilities upon request. The University encourages the employment of individuals with disabilities.
- 2.10 Independent Contractor: Whether the Contractor is a corporation, partnership, other legal entity, or an individual, the Contractor is an independent contractor. If the Contractor is an individual, the Contractor's duties will be performed with the understanding that the Contractor is a self-employed person, has special expertise as to the services which the Contractor is to perform and is customarily engaged in the independent performance of the same or similar services for others. The manner in which the services are performed shall be controlled by the Contractor; however, the nature of the services and the results to be achieved shall be specified by the University. The Contractor is not to be deemed an employee or agent of the University and has no authority to make any binding commitments or obligations on behalf of the University except as expressly provided herein. The University has prepared specific guidelines to be used for contractual agreements with individuals (not corporations or partnerships) who are not considered employees of the University.
- 2.11 Sexual Harassment: The University is committed to providing a positive environment for all students and staff. Sexual harassment, whether intentional or not, undermines the quality of this educational and working climate. The University thus has a legal and ethical responsibility to ensure that all students and employees can learn and work in an environment free of sexual harassment. Consistent with the state and federal law, this right to freedom from sexual harassment was defined as University policy by the Board of Trustees.

Failure to comply with this policy could result in termination of this Contract without advanced notice. Further information regarding this policy is available from the Director of Equal Opportunity, North Stevens Hall, Orono, Maine 04469; (207) 581-1226

- 2.12 Indemnification: The Contractor agrees to be responsible for, and to protect, save harmless, and indemnify the University and its employees from and against all loss, damage, cost and expense (including attorney's fees) suffered or sustained by the University or for which the University may be held or become liable by reason of injury (including death) to persons or property or other causes whatsoever, in connection with the operations of the Contractor or any subcontractor under this agreement.
- 2.13 Contractor's Liability Insurance: During the term of this agreement, the Contractor shall maintain the following insurance:

<u>Insurance Type</u>	<u>Coverage Limit</u>
1. Commercial General Liability (Written on an Occurrence-based form)	\$1,000,000 per occurrence or more (Bodily Injury and Property Damage)
2. Vehicle Liability (Including Hired & Non-Owned)	\$1,000,000 per occurrence or more (Bodily Injury and Property Damage)
3. Workers Compensation	Required for all personnel (In Compliance with Applicable State Law)

The University of Maine System shall be named as Additional Insured on the Commercial General Liability insurance.

Certificates of Insurance for all of the above insurance shall be filed with:
Office of Strategic Procurement
University of Maine System
16 Central Street
Bangor, Maine 04401

Certificates shall be filed prior to the date of performance under this Agreement. Said certificates, in addition to proof of coverage, shall contain the standard statement pertaining to written notification in the event of cancellation, with a thirty (30) day notification period.

As additional insured and certificate holder, the University should be included as follows:
University of Maine System
16 Central Street
Bangor, Maine 04401

- 2.14 Smoking Policy: The University of Maine is a tobacco-free campus. This policy applies to faculty, staff, students, contractors, vendors and visitors. The use of tobacco and all smoking products is not permitted on any university-owned property, which includes but is not limited to, buildings, university grounds, parking areas, walkways, recreational and sporting facilities and university-owned vehicles.

Tobacco use by definition includes the possession of any lighted tobacco products, or the use of any type of smokeless tobacco.

- 2.15 Employees: The Contractor shall employ only competent and satisfactory personnel and shall provide a sufficient number of employees to perform the required services efficiently and in a manner satisfactory to the University. If the Contract Administrator or designee, notifies the Contractor in writing that any person employed on this Contract is incompetent, disorderly, or otherwise unsatisfactory, such person shall not again be employed in the execution of this Contract without the prior written consent of the Contract Administrator.
- 2.16 Payments: Payment will be upon submittal of an invoice to the address shown on the purchase order by the Contractor on a Net 30 basis unless discount terms are offered. Invoices must include a purchase order number. The University is using several, preferred methods of payment: PCard (Visa); Bank of America's ePayables and PayMode electronic payment systems. Please indicate your ability to accept payment via any or all of these methods.
- 2.17 Parking Regulations and Use of Walkways: The Contractor's vehicles and those of their employees working on campus must be registered with Parking and Transportation Services. Unregistered vehicles on the University campus are subject to a parking violation ticket and/or towing off campus. Contractors are advised that parking regulations are strictly enforced by campus police. Towing will be at the Contractor's expense. A copy of regulations can found at <http://www.umaine.edu/parking> or by calling 581-4047.
- 2.18 Solid Waste Removal: The Contractor shall be responsible for cleaning up and removing all waste materials created by the Contractor's operation from University premises by the end of the day. The Contractor shall promote waste reduction and recycling and follow University policies to reduce, reuse and recycle.
- 2.19 Protection and Security of Buildings and Property: The Contractor shall ensure adequate protection of the properties and adjacent properties from damage or loss in the performance of the work under this contract. The Contractor shall assume total liability for any damage to

buildings, grounds, surfaces, etc., or other property, including vehicles, resulting from negligence of the Contractor or the Contractor's employees and subcontractors in the performance of the work.

2.20 Liens: The Contractor shall keep the University free and clear from all liens asserted by any person or entity for any reason arising out of the furnishing of services or materials by or to the Contractor.

2.21 Pricing: Quoted prices shall be all inclusive.

SECTION THREE

3.0 PROPOSAL CONTENT:

Bidders shall ensure that all information required herein is submitted with the proposal. All information provided should be verifiable by documentation requested by the University. Failure to provide all information, inaccuracy or misstatement may be sufficient cause for rejection of the proposal or rescission of an award. Bidders are encouraged to provide any additional information describing operational abilities. Responses to each requirement below should be in order and clearly marked with the section number to which they respond.

3.1 Business Profile:

3.1.1 **No financial statements are required to be submitted with your proposals,** however, prior to an award the University may request financial statements from your company, credit reports and letters from your bank and suppliers.

3.1.2 **Please submit with your proposal** a detailed history and description of your company and any published reports about your company.

3.2 Pricing:

OPTION ONE: COMPUTE CLUSTER: All servers and nodes related to both HPC and Cloud services listed above except for the centralized NAS system. The cost of all hardware, software, maintenance, delivery and installation should be included in the proposal. Hardware should include Head node(s), Cloud servers, compute nodes, all networking equipment and racks.

OPTION TWO: CENTRALIZED NAS SYSTEM: Hardware and software for implementing a high performance fault tolerant NFS file server with at least 50 Terabytes of usable storage space. The NAS system should be capable of serving aggregate NFS bandwidth of at least 800 Megabytes per second. Higher performance systems will be looked at favorably. The NAS system should be capable of serving NFS data over 10 GbE and QDR InfiniBand (40 Gb/sec) using RDMA. If for some reason only one interface is proposed, explain why the proposed system is limited to just the one type. The cost of all hardware, software, maintenance, delivery and installation should be included. Highly fault tolerant systems will be looked at favorably. For instance it is beneficial, but not a requirement, to be able to survive the failure of a whole disk shelf without loss of data. Proposals that include redundant RAID controllers, paths to disk shelves, paths to disks and power supplies will be looked at favorably.

3.3 Equipment to be provided on the Contract:

OPTION ONE: All equipment and software necessary to build an operational HPC cluster as specified.

OPTION TWO: All equipment and software necessary to build a Centralized NAS system as specified.

Needs for HPC

The HPC usage requires high bandwidth interconnection. In addition to 1 Gigabit Ethernet for standard networking needs, QDR Infiniband or 10 Gigabit Ethernet or the equivalent is required for interprocess communication. Interprocess bandwidth should be no less than the equivalent of one full speed connection for each 32 compute cores. Each compute node

should have no less than 4GB of RAM per core.

Needs for Cloud

Cloud machines should include 10 GbE or QDR InfiniBand or both. In both cases VLAN support over the interconnect in the cloud software is required. 4GB of RAM per core is minimally acceptable, but higher is preferred.

Software

Hardware-only proposals will be accepted. Higher consideration will be given for proposals that include software for managing HPC queuing, managing virtual machines, and general system administration. Either open source software or commercial software may be specified, however, the total cost of the software over the life of the machine will be used as a metric in the evaluation process.

Service Agreement

Equipment provided should come with a minimum of three year service agreement included in the purchase price.

Expandability

After the initial purchase, it is the goal of the University to continue to grow this resource. Thus it is desirable that the specified platform will remain available for a reasonable length of time following the purchase, i.e., close-outs or end-of-production units are less desirable. The incremental cost per computing node will be considered, as will the number of nodes that can be added before additional costs (such as a larger network switch) are incurred.

Considerations

The primary considerations for this project are cost and performance. Cost includes, but is not limited to, purchase price per computational core, software licensing costs, maintenance contracts, power consumption, administrative effort, and perceived lifetime of the device. When costs are equal or similar, preference will be given to lower recurring costs. Performance is a subjective measure based on a range of anticipated use cases.

3.4 Other items to be addressed in all proposals:

- Hardware specifications
- Software specifications
- Clear indication of price
- Clear indication of recurring expenses, such as service agreements or annual licensing fees
- Total number of cores in the proposal
- Total number of HPC cores in the proposal
- Total number of Cloud cores in the proposal (note that dual use cores should be counted as both HPC and Cloud)
- Incremental price, and number of cores in a single increment for adding an HPC node
- Incremental price, and number of cores in a single increment for adding a cloud node
- Number of increments possible before requiring additional hardware, such as a larger/additional network switch

3.5 Payment Method: Indicate your ability to accept electronic payments. (Section 2.16)

3.6 References: Bidders shall submit three references with your proposal. These references should be agencies your firm has done business with in the past year on projects with a similar scope to this one. Provide company names with contact person and telephone number.

SIGNATURE PAGE

COMPANY NAME: _____

By: _____
(Signature)

(Print Name)

(Title)

(Phone)

(Cell Phone)

(E-mail Address)

(Date)