

AMENDMENT NUMBER 3 TO SOLICITATION NUMBER 511017

<p>ISSUED BY:</p> <p>Triad National Security, LLC (TRIAD) Los Alamos National Laboratory PO Box 1663, MS D447 Los Alamos, NM 87545</p>	<p>TRIAD SUBCONTRACT ADMINISTRATOR:</p> <p>Maureen Armijo Telephone No.: 505-665-2098 Fax No.: 505-665-8944 Email Address: m_armjo@lanl.gov</p>
<p>PROJECT NAME: Crossroads Supercomputer</p>	
<p>CURRENT PROPOSAL / BID DUE DATE:</p> <p>3/18/2019</p>	<p>REVISED PROPOSAL / BID DUE DATE:</p> <p>N/A</p>
<p>DESCRIPTION OF CHANGES:</p> <p>Amendment 3 is written to answer the following questions:</p> <ol style="list-style-type: none"> 1. Question 1: In the <i>Summary</i> file for Branson under 'Benchmark results', explicit formulas for the total memory per node are given. For the 'Particle Memory' and 'Mesh Memory' formulas, should 'n ranks per node' be 'number of nodes'. For the 'Buffer Memory' formula, should the multiplier be 'n ranks per node' or something else? <p style="color: red; margin-left: 20px;"> Answer 1: Yes, for 'Particle Memory' and 'Mesh Memory', the quantity should be 'number of nodes' instead of 'n ranks per node'. For the 'Buffer Memory' calculation, the quantity is correct in the summary. Each rank allocates its own buffers and handles its own MPI messages. The Branson <i>Summary</i> file will be updated. </p> 2. Question 2: Could the Crossroads Project team explicitly show the calculation for the 50TB number for the large run given for Trinity under the "Benchmark Results in the Branson summary document using the total memory formulas per node in that document? <p style="color: red; margin-left: 20px;"> Answer 2: To calculate the total memory used for the large run using the formulas provided in the Branson summary document: particle: $(331776000000 \text{ total particles} * 88.0 \text{ bytes/particles}) / 1.0e12 = 29.196 \text{ TB}$ mesh: $(5.12e8 \text{ mesh cells} * 1000 \text{ bytes/cell}) / 1.0e12 = 0.512 \text{ TB}$ buffers: $(500 \text{ grip size} * 12 \text{ grips/buffer} * 6 \text{ buffers} + 50000 \text{ cell map size}) * 110592 \text{ ranks} * 1000.0 \text{ bytes/cell} = 9.51 \text{ TB}$ total: 39.218 TB NOTE: The Branson summary document provides formulas for total memory per node, whereas the above calculation shows the total memory for this run. </p> 3. Question 3: For Branson, the grip size in the proxy_large.xml input is 500. The Branson summary document mentions a grip size of 10000. Should the Offeror use a grip size of 500 or 10000 for the baseline run? 	

Answer 3: The Offeror should use the grip size of 500 as is given in the input file. The advice of “10000” applies to more run cases (between 256-2048 cores).

4. Question 4: For UMT, the runs on the final system must be performed with “total memory for data of at least 344,000 GB”. Is it sufficient that the total memory used by the binary (across all ranks) should be greater than 344,000 GB? Or should the memory for data be calculated according to the description in Section 7.2 (Memory Considerations & Use) of the “UMT for Crossroads” document?

Answer 4: The Crossroads Project team would like the amount of memory consumed for the run to exceed 344,000 GB. This can include the executables and any appropriate system libraries.

5. Question 5: Also, for UMT, if the calculation in Section 7.2 of the *Summary* file should be used, then it appears that the 125,000 rank (3907 node) baseline case is not sufficiently large, since it uses 336.08 TB (= 344,146 GB) of total memory. However, not all of this memory is used for data – and the calculations in Section 7.2 give 1.6 GB per MPI rank for **numzones** = (4,4,4), which is a total of 202,750 GB for data. Is this correct?

Answer 5: See Response 4. The Crossroads Project team would like the total amount of memory consumed to exceed 344,000 GB, with the includes of the executables and appropriate system libraries.

6. Question 6: The Branson benchmark requires the use of ParMETIS. However, the licensing for ParMETIS states:

It can be freely used for educational and research purposes by non-profit institutions and US government agencies only. Other organizations are allowed to use ParMETIS only for evaluation purposes, and any further uses will require prior approval.

Are alternatives permitted?

Answer 6: Two source files for Branson are available. One uses ParMETIS and the other uses METIS.

ParMETIS version: branson-xroads-v1.0.0.tgz on Crossroads website (tag 0.81)

Metis version: branson-0.82.tar.gz on Crossroads website or clone from github <https://github.com/lanl/branson> using commit 8b42c3caa37d563a27a85519522f236dfd8fd159 (tag 0.82)

The Trinity FOM was run using the ParMETIS version of Branson (tag 0.81). The offeror may use either version of Branson described above to provide the

FOM and should specify the version used in the proposal. The offeror commits to using the same version in the final statement of work.

7. Question 7: What is the budget for the RFP?

Answer 7: We will not be disclosing what the current budget is set at. The funding steam was updated in Amendment 1 to read as follows:

Crossroads System – anticipated funding stream

Percentage of Total Funding						
FY19	FY20	FY21	FY22	FY23	FY24	FY25-26
14%	17%	40%	12%	7%	5%	5%

Failure to acknowledge this amendment, formerly called an addendum, in accordance with the Instructions to Offerors or Solicitation Provisions may result in rejection of your proposal / bid. Except as provided herein, all terms and conditions of the Request For Proposal / Solicitation, as heretofore changed, remain unchanged and in full force and effect.

ISSUED ON BEHALF OF TRIAD BY:


Subcontract Administrator

2/11/19
Date

RECEIPT ACKNOWLEDGED BY:

Signature & Title

Date

Company Name