



LAWRENCE  
LIVERMORE  
NATIONAL  
LABORATORY

LLNL-TR-499073

# FY11 Level-2 Milestone 3953: TLCC2 contract awarded

B. Carnes

September 13, 2011

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## Introduction

This report documents completion of FY11 L2 milestone # 3953- TLCC2 contract award. This milestone was scheduled for completion on 3/31/11 and was completed on 4/14/11. There is a separate milestone (3856), due at the end of the fiscal year, concerned with installation of the first LLNL SU and early user access.

Efforts related to this tri-lab L2 milestone started early in 2010 with the development of tri-lab requirements for the second ASC capacity system procurement. The SOW was then developed along with necessary RFP paperwork and sent to HQ/DOE for their review prior to being released. There was significant delay in getting this step completed which led to this milestone being put at risk for several months. However, once the RFP was approved and released we were able to get the procurement back on track with aggressive proposal response and review timelines.

The formal proposal number was “**Request for Proposal B590550**” and it was published via the following web site: <https://asc.llnl.gov/tlcc2/rfp/>. The overall timeline for the process was:


RFP released	12/22/10
Bids Due	2/11/11
Tri-Lab Selection	2/16-17/11
Vendor Negotiations	2/22-24/11
LLNL Contract Review Board	3/16/11
LSO/ALB SC/HQ Contract Review	3/17/11-4/7/11
Contract Signed	4/14/11
Architecture Decision Point	6/1/11

The following attachments contain the detailed milestone text, a copy of the first page of the signed contract, one of the emails sent to HQ describing the tri-lab program reviews that were held, and a few select slides from a presentation that was given following the contract award to interested stakeholders at LLNL.

## Attachment 1: Milestone Definition Text

<b>Milestone (ID#): TLCC2 contract awarded</b>				
<b>Level:</b> 2	<b>Fiscal Year:</b> FY11	<b>DOE Area/Campaign:</b> ASC		
<b>Completion Date:</b> March 31, 2011				
<b>ASC WBS Subprogram:</b> CSSE				
<b>Participating Sites:</b> LLNL, LANL, SNL				
<b>Participating Programs/Campaigns:</b> ASC				
<b>Description:</b> Develop, issue, and evaluate the RFP for the TLCC2 platform and award a contract.				
<b>Completion Criteria:</b> Contract awarded to winning vendor for TLCC procurement				
<b>Customer:</b> ASC HQ				
<b>Milestone Certification Method:</b> A program review is conducted and its results are documented. Professional documentation, such as a report or a set of viewgraphs with a written summary, is prepared as a record of milestone completion.				
<b>Supporting Resources:</b> CSSE, FOUS, procurement staff				
<b>Supporting Milestones:</b>				
<b>Program</b>	<b>Title</b>	<b>Due Date</b>		
N/A	N/A	N/A		
<b>Codes/Simulation Tools Employed:</b> N/A				
<b>Contribution to the ASC Program:</b> Common platforms leverage resources and enhance user efficiency.				
<b>Contribution to Stockpile Stewardship:</b> Provides capacity computing cycles necessary for stockpile stewardship.				
No.	Risk Description	Risk Assessment (low, medium, high)		
		Consequence	Likelihood	Exposure
1	COTS vendor silicon non-functional	High	Low	Low
2	Integrator unable to perform	High	Low	Low

## Attachment 2: Signed Contract

<p align="center"><b>SUBCONTRACT</b></p> <p align="center"><b>NO. B590550</b></p>	 <p>Lawrence Livermore National Laboratory Supply Chain Management Department P.O. Box 5012 Livermore, CA 94551</p>
<p><b>Subcontractor:</b></p> <p>APPRO INTERNATIONAL, INC. Attention: James Yi 446 South Abbott Avenue Milpitas, CA 95035</p> <p><b>Phone #:</b> (408) 941-8100 <b>E-Mail:</b> <a href="mailto:jamesyi@appro.com">jamesyi@appro.com</a></p>	<p><b>LLNS Contract Administrator:</b></p> <p>Gary M. Ward <b>Phone:</b> (925) 423-5952 <b>E-Mail:</b> <a href="mailto:ward31@llnl.gov">ward31@llnl.gov</a></p>

**Introduction**


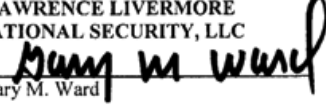
This is a Fixed Price Subcontract for the delivery and installation of Scalable Units (SUs) at Tri-Laboratory sites, integration of those SUs into fully functional clusters, training, and hardware and software maintenance service, as further described herein.

The parties to this Subcontract are Lawrence Livermore National Security, LLC (hereinafter called "LLNS") and the party identified above as the "Subcontractor."

This is a Subcontract under Prime Contract No. DE-AC52-07NA27344 between LLNS and the United States Government (hereinafter called "Government"), represented by the Department of Energy National Nuclear Security Administration (hereinafter called "DOE/NNSA"), for the management and operation of the Lawrence Livermore National Laboratory (hereinafter called "LLNL") and the performance of certain research and development work.

**Agreement**

The parties agree to perform their respective obligations in accordance with the terms, conditions, and provisions of the attached SCHEDULE OF ARTICLES and any documents referenced or incorporated therein, which together with this Subcontract Signature Page shall collectively constitute the entire Subcontract and shall supersede all prior negotiations, representations, or agreements, whether verbal or written.

<p align="center"><b>APPRO INTERNATIONAL, INC.</b></p> <p>BY: </p> <p>TITLE: <u>VP, Finance &amp; Admin.</u></p> <p>DATE: <u>04/14/2011</u></p>	<p align="center"><b>LAWRENCE LIVERMORE NATIONAL SECURITY, LLC</b></p> <p>BY: </p> <p>TITLE: <u>Contract Administrator</u> <u>LLNL Supply Chain Management</u> <u>Department</u></p> <p>DATE: <u>14 APRIL 2011</u></p>
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Signature Page

Req. No. TBD  
(DM-711; 06/21/10)

## Attachment 3: HQ letter on program reviews

**From:** Carnes, Brian R.

**To:** Bob Meisner (Bob.Meisner@nnsa.doe.gov); Douglas Wade (Douglas.Wade@nnsa.doe.gov)

**Cc:** McCoy, Mike; "Lee, Sander L."; Carnes, Brian R.

**Subject:** TLCC2 review a success

**Date:** Thursday, February 17, 2011 3:51:08 PM

**Importance:** High

Dear Bob and Doug,

Michel suggested I send you a quick update on the TLCC2 process. The proposal reviews are now complete. We had a full day technical review yesterday in Albuquerque and spent all morning today on the business review here in Livermore. All three Labs were well represented at both reviews. Both the technical and business reviews went very well and all participants seemed very happy with the results. I received many positive comments from the other Labs on how smooth it went. We have unanimous tri-lab consensus from both the technical and business reviews. From the procurement point of view, we have the best possible outcome – our top technical choice yesterday came in at the best price today. Overall, it could not have gone better. We hope to begin contract negotiations with the winning bidder in Livermore on Tuesday morning. We will work aggressively to complete the paperwork to get the package in the review pipeline as soon as possible.

Best regards, Brian.

## Attachment 4: Select slides from presentation



Request for Proposal B590550  
<https://asc.llnl.gov/tlcc2/rfp/>



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## Contract Decision Point

Milestone No.	Milestone Description	Due Date	Payment Amount
5.5.1	Detailed Project Plan	7 Days After Subcontract Award	\$50,000
5.5.2	Tri-Laboratory TOSS Multi-node Checkout	May 2011	\$50,000
5.5.3	TLCC2 SU Architecture Decision Point	06-01-11	\$ 50,000
5.5.4 (SOW Plan A) 6.5.1 (SOW Plan B)	Tri-Laboratory TOSS Final Checkout	August 2011	\$ 50,000
<b>TOTAL FIXED PRICE</b>			<b>\$ 200,000</b>

**Option A1**


Intel Sandy Bridge

Mellanox Connect-X3 IB

**Option A2**

Intel Sandy Bridge

QLogic QDR IB



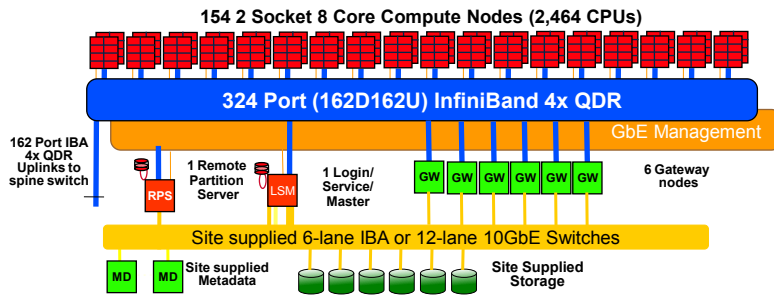

**Option B**

AMD Interlagos

QLogic QDR IB



# TLCC2 SU Configuration



## System Parameters: ~50 TF/s SU

- Dual Socket Eight-Core Intel Xeon Sandy Bridge-EP nodes
- 32 GB DDR3-1600 SDRAM (64 GB on LLNL Gateway nodes)
- <3  $\mu$ s MPI latency and 4+4GB/s Bandwidth over QLogic IBA 4x QDR
  - Built from 648, 324, and 36-port IBA switches
- No local disk on compute and gateway nodes. Remote boot from RPS nodes
- IO Bandwidth 20 GB/s delivered parallel I/O performance
- Software for build and acceptance TOSS 2.0
- GPU node option with 2xGPUs per node

# TLCC2 Timeline

