

JUSTIFICATION FOR OTHER THAN FULL AND OPEN COMPETITION

Upon the basis of the following justification, I as Contracting Officer hereby approve use of the other than Full and Open competition for the proposed contractual action pursuant to the authority of 10 USC 2304(c)(1), only one responsible source and no other supplier or servicing activity will satisfy agency requirements, as implemented by FAR 6.302-1.

1. Contracting Activity

Naval Postgraduate School
Department of Contracting and Logistics
1 University Circle
Monterey, CA 93943

2. Description of the Action Being Approved

This justification covers the procurement of EXata, a network emulator, with TIREM Interface and Urban Propagation Libraries from SCALABLE Network Technologies, Inc. This justification for other than full and open competition will be posted at the Government wide Point of Entry.

3. Description of Supplies/Services

EXata is a comprehensive suite of tools for emulating large wired and wireless networks. It uses simulation and emulation to predict the behavior and performance of networks to improve their design, operation, and management. EXata software virtual network (SVN) provides a cost-effective and easy-to-use alternative to physical testbeds that typically have high equipment costs, complex setup requirements and limited scalability [1].

EXata enables users to:

- Develop emulation or simulation models for new networking technologies
- Design new network technologies
- Design new communications protocol models using the OSI-style architecture of Exata protocol stack
- Design wireless networks of real world size (Exata can be run on multi-core processor computers to evaluate large wireless networks of 100s and 1000s of devices)
- Perform what-if analyses: Analyze the performance of networks and perform “what-if” analyses to optimize them. You can design a network, and then run batch experiments to test network performance when parameters, such as routing protocols, timers, and transmission power, are varied.
- Connect real networks, applications, and devices with Exata emulated network
- See real applications run on emulated networks: Exata can run real applications, such as VoIP, Internet browsers, and streaming video, on emulated networks as if they are running on real networks
- Train with the network before it is ready to be deployed: Exata makes it possible to conduct training and operations with next-generation tactical networks and devices that are still being designed
- Analyze and manage Exata virtual networks with popular, industry-standard, tools

- Snoop on packets: Exata has a packet sniffer interface that enables third-party tools like Wireshark and Microsoft Network Monitor to snoop/capture traffic from any device in Exata and analyze it. This lets you debug and troubleshoot network problems.
- Manage an emulated network: Exata comes with a SNMP Agent, which enables you to use standard SNMP managers to view, monitor and control emulated networks in Exata just like managing real networks [1].



4. Statutory Authority Permitting Sole Source

FAR 6.302 -- Circumstances Permitting Other Than Full and Open Competition.

- 6.302-1 -- Only One Responsible Source and No Other Supplies or Services Will Satisfy Agency Requirements.

5. Rational Justifying Use of Cited Statutory Authority

Some of the students in the Department of Electrical Engineering are using the academic version of Qualnet, which is a lower end version of EXata. Currently, the students are trained in this simulation environment, so they can use EXata for more advance simulation and emulation for their final and research projects. At the same time, Rachedi et. al. [2] points out the performance of Qualnet as compared to other simulators; from the results, Qualnet seems to provide the best fit for our research. We need an emulator that can handle large networks in the order of 1000s of nodes running in a cluster environment with discrete simulation.

6. Description of Efforts Made to Solicit Offers from as Many Offerors as Practicable

Survey has been done using Google. Different simulators and emulators, such as NS2, OPNET, and EXata, have been reviewed by reading webpages describing their capabilities and talking to staffs, where possible, regarding the features of their products but, to the best of our knowledge, only EXata fits the needs of our students and research.

7. Determination of Fair and Reasonable Cost

Costs will be determined fair and reasonable at time of award by the Contracting Officer and based on previous contracts and similar contracting efforts.

8. Market Research

Survey has been done using Google. Different simulators and emulators, such as NS2, OPNET, and EXata, have been reviewed by reading webpages describing their capabilities and talking to staffs, where possible, regarding the features of their products but, to the best of our knowledge, only EXata fits the needs of our students and research. We need an emulator that can handle large networks in the order of 1000s of nodes running in a parallel cluster environment with discrete simulation. According to Rachedi et. al. [2], Qualnet,

which is a lower end version of EXata, provides the closest performance to actual indoor and outdoor testing results.

9. Other Facts Supporting Use of Other Than Full and Open Competition

Students and faculties are currently using Qualnet (lower end version of EXata) for course work, and it is necessary that they use the same emulation platform for sponsored research in order to minimize time and be compatible with prior developed work.

10. Actions to Remove Barriers to Future Competition

Faculties can use different network simulators/emulators in the classroom.

References:

[1] <http://web.scalable-networks.com/>

[2] A. Rachedi et. al., "Wireless Network Simulators Relevance Compared to a Real Testbed in Outdoor and Indoor Environments," 6th International Wireless Communications and Mobile Computing Conference (IWCMC'10), France, 2010.

CERTIFICATIONS AND APPROVAL

TECHNICAL/REQUIREMENTS CERTIFICATION

I certify that the facts and representations under my cognizance which are included in this Justification and its supporting acquisition planning documents, except as noted herein, are complete and accurate to the best of my knowledge and belief.

Technical and Requirement Cognizance:



CONTRACTING OFFICER CERTIFICATION

To the extent that the LSJ value is between \$2,500 and \$150K for services and between \$3K and \$150K for products, the Contracting Officer's signature below also represents approval of the J&A/LSJ.

I certify that this Justification is accurate and complete to the best of my knowledge and belief.

