

**Supercomputer Education and Research Centre
Indian Institute of Science,
Bangalore**

RFP No. SERC/NBK/DoT-Tools/10/2019

Proposals are invited, in two-cover format, from bidders for the following Security Testing Tools/ equipment's

1. L4- L7 Testing Traffic Generator
2. Attack Traffic Generator

Detailed technical specification for each of the above is given as annexure A & annexure B

1.0. Bidder Eligibility Criteria

- a) Bidder should be either OEM or his authorised agent. If bidder is an authorised agent then he should submit documentary proof that he has been authorised to submit bid for this enquiry.
- b) The bidder should have a track record of having previously supplied similar equipment.
- c) The bidder must have a proven record of maintaining and managing the similar system in India. Purchase order copies of previous installations are required along with customer contact details
- d) The bidder should have qualified technical service personnel based in India for supporting the tool/equipment.
- e) The bidder should be in a position to demonstrate their competence and capability, as a team, to deliver all the services expected during the contract period.
- f) In case the bidder is an authorised representative for the OEM the technical bid should clearly demarcate the responsibilities between the OEM and the bidder. Complete details of the same have to be submitted along with the bid.

2.0 Submission of Proposal

- a) The quotation should be in Two-cover format – a Technical part and Commercial part for each enquire within this RFP
- b) Covers containing the technical and commercial bids must be individually sealed and superscribed respectively as "Technical Bid" and Commercial Bid" along with Enquiry ref no. as given in the annexures.
- c) The two covers must be put in a larger enveloped, sealed, superscribed with Enquiry ref no. as given in the annexures.
- d) All the covers should bear the name and address of the bidder.
- e) Bidder can quote for one or more of the items indicated in this RFP
- f) Non-conformance of any of the above can result in disqualification. All the pages must be signed by the bidder.

2.1 Technical Bid

The technical bid should contain the following.

- a) Detailed Technical description of the product proposed.
- b) Compliance statement indicating it meets each and every clause in the terms and conditions, technical/commercial specification
- c) Unpriced bill of material with quantities of each line item.
- d) Datasheet of product/model
- e) Undertaking to support the tool/equipment is given in Form A, it must be signed by the OEM enclosed as part of the Technical Bid.
- f) If the bidder is not the OEM, then appropriate letter from the OEM should be submitted authorizing the bidder to submit proposal for this RFP
- g) Bids have to quote exactly as per mentioned specifications for entire solution, partial offers will not be accepted.
- h) The technical bid should not contain any price information. Non-conformance will result in disqualification.

2.2 Commercial Bid

- a) The Commercial bid should contain details of the prices for each one of the subsystems of the total offer giving clearly the rate and the quantity. Bundling of the prices is not acceptable.
- b) Bidders proposing multiple options must quote for each of the configurations separately.
- c) Warranty charges, if any, must be quoted separately.
- d) In addition AMC charges for additional Year 2 and Year 3, should be quoted separately.

3.0 Installation, Warranty, Annual Maintenance, Training and Support

- a) The total solution as per the bill of materials has to be supplied within 4 weeks after receiving a firm PO from IISc
- b) The installation and commissioning of the tool/equipment should be completed within a week after supply of the equipment.
- c) Alternatively Installation and commissioning of the tool/equipment should be done with 5 week of release of Purchase Order.
- d) Warranty services
 1. Should be for a period of one year from the date of acceptance of the equipment for both hardware and software .
 2. The bidder shall be fully responsible for the warranty in respect of proper design, quality and workmanship of all the systems supplied.
 3. The bidder shall attend to all the hardware and/or software problems on site and shall replace the defective parts at no extra cost to the purchaser within 5 working days after reporting the issue
 4. The preventive maintenance and repairs of the components supplied by the bidder are the responsibilities of the bidder
 5. Software updates must be promptly done.

6. All software tools /updates should also be provided in CD format/USB format and the purchaser shall be permitted to make at least 2 copies of the software tools /updates for emergency recovery.
7. OEM/Bidder shall clearly specify the conditions over which warranty will be void. Detailed document regarding warranty conditions and applicability should be submitted along with Bid along with a declaration of accepting the warranty conditions of the purchaser stated at above clause 3(d)
8. Performance security guarantee through any Nationalized Bank in India for 10% of the cost of the equipment shall be given by the selected bidder to the purchaser . Format of the Performance security guarantee will be given by the purchaser at the time of issuing the APO
9. Courts of Bangalore/ New Delhi shall have exclusive jurisdiction over matters covered or flowing from this warranty.

e) Annual Maintenance

1. Annual Maintenance Contract services should be valid for a period of two years after warranty period and the AMC charges for 2nd and 3rd year should be quoted separately.
2. The Bidder or OEM shall provide patches/updates for any software bug, noticed from the date of supply till the end of contract at no extra cost to the purchaser.
3. Upgradation of the tools shall be intimated by the supplier within one week from the date of release.
4. Any hardware, software, firmware which is required as a pre-requisite to support upgradation shall be provided free of cost. Any specific training to utilize the upgraded feature shall be provided on site by the supplier at no extra cost to the purchaser

f) Detailed Hands –on Training shall be provided for 10 officials on Configuration/usage of tool equipment's supplied for the number of working days as specified in the TABLE 1

g) These tools/equipment are purchased as part of a project from Dept. of Telecommunication (DoT), Govt. of India. The tools/equipment along with the licences will be transferred to a DoT, Govt of India or any other organization under its administrative control. The bidder must give an undertaking to continue to support the same. (Form A)

h) The OEM must give an undertaking to provide service for 7 years, in case OEM is taken over by the new entity must continue to provide the service without any break. In case the bidder is not OEM , this undertaking has to be obtained from OEM by the bidder and furnish. During these assured 7 years life span of the Equipment (Hardware/Software), Bidder/ OEM should be able to provide AMC (as mentioned in para 3) if the purchaser requires so. "

4.0 Additional Guidelines:

- a) IISc is eligible for customs exemption under notification 10/97-ce. Bidders planning to quote any imported solution have to give the offer in the US dollar.
- b) The offer has to clearly explicitly state the supply part, Warranty services and any other charges separately.
- c) Delayed and/or incomplete tenders are liable to be rejected.
- d) All the pages of Technical Bid and the Commercial Bid should be duly signed by the bidder.
- e) Commercial bids of technically qualified bids alone will be taken up for further processing.
- f) The Director, IISc, Bangalore-12 reserves the right to modify the technical specifications or the required quantity at any time.
- g) The Director, IISc reserves the right to accept or reject any proposal, in full or in part, without assigning any reason.
- h) The bidders are requested to go through the Terms and Conditions detailed in this document, before filling out the tender. Agreeing to the terms and conditions of the tender document (by signing all pages of the copy of a tender document) is a mandatory requirement
- i) A tender, not complying with any of the above conditions is liable to be rejection.
- j) The Bid must be sent the following Address,
 - Project "National Telecom Testbed"
 - Room NO. 406
 - Supercomputer Education and Research Centre
 - Indian Institute of Science
 - Bangalore 560 012

5.0 Commercial Terms and Conditions

- a) The commercial bid should contain among other things, payment terms, warranty, installation and commissioning charges. These charges will be paid only after successful supply, installation and acceptance.
- b) Prices may be quoted in US Dollars. (if applicable).
- c) Vendor should quote the prices for shipment on 'CIF' terms.
- d) Withholding tax, if applicable, will be deducted from the bid amount.
- e) In case of imports, the commercial bid should contain among other things the name and address of the Indian agent, if any and the agency commission payable to him. Agency commission part will be deducted and will be paid to him separately in equivalent Indian rupees.

Important Dates

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| Publication of RFP | 03/07/2019 |
| Pre-bid Meeting | 12/07/2019 |
| Submission of Bid | 26/07/2019 5:00 PM |
| Opening of Technical Bid | 27/07/2019 |
| Opening of Commercial Bid | To be announced |

Annexure A

a. Enquiry No. SERC/NBK/TG/2019

b. Quantity required: 1 No

c. Technical Specifications

| L4-L7 Testing Traffic Generators - Technical Specifications | | |
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| Sl. No | | Compliance |
| | General Requirements | |
| 1 | Test Equipment should be chassis based with a minimum no of two slots | |
| 2 | Vendor should also provide all required Transceivers 850nm and Breakout cables to support all speed | |
| 3 | Vendor should supply both Copper and optical cable connectivity | |
| 4 | Multiple simultaneous users should be supported on Traffic Generator without degrading impact to others | |
| 5 | Single point of management for all equipments/modules available in the chassis | |
| 6 | Managing configuration of individual module of each equipment should be possible | |
| 7 | Creation, saving and reuse of multiple configuration profiles for every module of each equipment | |
| 8 | Client GUI Application/Software available for download/installation | |
| 9 | Support of upgradation new software release under AMC | |
| 10 | Configuring tabular/graphical display of analysis results | |
| 11 | User should get option to save graphical result in JPG,bmp etc. format | |
| 12 | Shall support real time graphical display of received and transmitted traffic statistics | |
| 13 | shall support User Friendly GUI | |
| 14 | shall Support option to convert the GUI configuration into automation script TCL, Python, etc. and should also support Automation APIs | |
| 15 | On line help Menu in the client application | |
| 16 | Result / report File formats: >CSV >PDF >HTML/XML | |
| 17 | Equipment shall be based on standard operating systems | |
| 18 | It shall be able to emulate real world traffic and shall be able to support simultaneous multiple protocols to emulate real multi-play user scenario | |
| 19 | The modules of the test equipment shall be hot swappable. | |
| 20 | Support one arm testing and 2 arm testing | |

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| | Physical Interface Requirements | |
| 21 | Support 100G Gigabit Ethernet and QSFP28 (Optical) | |
| 22 | Support 10G Gigabit Ethernet and SFP+ (Optical) | |
| 23 | Support multiple modules for 40G,25G,50G by default without adding any additional Hardware | |
| | Port Density Requirements | |
| | Interface type Minimum number of ports required | |
| 24 | 100G Ethernet Speed support (QSFP28 and GigaEthernet) 2 | |
| 25 | 10Gbps Speed (SFP+ and Giga Ethernet) 2 | |
| | Applications Support | |
| 25 | Basic Protocols Support | |
| | VLAN and VLAN QinQ | |
| | Both IPV4 and IPV6 or a mix of IPV4 or IPV6 traffic support | |
| 26 | Transport layer protocol emulation Support | |
| | TCP,UDP,QUIC Protocol, SSLV2 ,SSLV3,TLS 1.1, TLS 1,2.TLS 1.3. | |
| 27 | Data Protocol Emulation Support: | |
| | HTTP 1.0 & 1.1,HTTP 2.0.HTTPs,FTP,SMTP, SMTP over SSL,POP3 and POP3, over SSL,IMAP4 and IMAP4 over SSL,DNS,DHCP,SSH | |
| 28 | Data Base Protocol Emulation Support | |
| | DB2, My SQL, MS SQL, Oracle | |
| 29 | EMAIL Application Protocol Emulation Support | |
| 30 | Voice Protocol Emulation support | |
| | SIP, RTP & SRTP | |
| 31 | Video Protocols Emulation Support | |

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| | RTSP IP TV (Multi Cast), Video Advanced (VOD) | |
| 32 | Other protocols | |
| | Sys Log, TFTP, IP SEC,SNMP V3 | |
| 33 | Ability to import PCAP or modify existing scenario description to creating new user desired traffic | |
| 34 | Ability to define and use variables in imported traffic or in client emulated traffic | |
| 35 | Replay Capability | |
| | Able to replay the stateful traffic from trace file(PCAP format) at line rate. | |
| 36 | Replay Method | |
| | Stateless and Stateful Traffic generation | |
| 37 | Type of Simulation supprt | |
| | i. Client & Server Mode ii.Only Client Mode iii.Trace file i.e. Packet Capture replay. | |
| 38 | Application Traffic Load Profile | |
| | Should be capable of specifying the flexible load variables:- a> Connections per second b> Concurrent Open Connection c> Transcations per second d> Concurrent Transcations e> Concurrent users | |
| 39 | Measurement :- | |
| | Possible to measure statistics simultaneously on all streams for ex:- a> Throughput b> Rx rate and TX rate c> Latency d> Frame rate e> Frame Loss | |

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| 40 | Flexi Configuration option:- | |
| | a> Able to configure the unit to generate the user defined Application traffic for ex:- > Mix Application Traffic > Service Provier scenario > NetSecOpen Profile > Business > Communications > Social Networking > Games and Entertainment | |
| 41 | Number of concurrent connections :- | |
| | 1> Should support > 80 Million HTTP open Concurrent Transcations per Chassis 2> Should support > 1.4 Million HTTP 1.0 Transcations Per second 3> Should support > 2.3 Million HTTP 1.1 Transcations Per second 4> Should support > 2 Million DNS Query Per second | |
| 42 | Multi Protocols Support :- | |
| | >Should be able to generate Layer 4 - Layer 7 traffic on the same chassis and should be able to run Multi-Protocols on single port at the same time | |
| | Report Generation :- | |
| 43 | Should be able to generate standard and user configurable reports and graphical representations | |
| | Support exporting test reports for archive and backup | |
| 44 | Should support below test suites for Application performnace and Security Testing:- a> HTTP Throughput Test b> Throughput with Mixed Traffic Test c> DNS Performance Test d> Network Traffic Replay Test e> HTTP Open Connections Test f> HTTP Connection Per Second Test g> Cyber Security Assessment Test h> Only Volumetric DDoS Attacks and Volumetric DDoS Attacks with Legitimate Traffic i> Only Protocols DDoS Attacks and Protocols DDoS Attacks with Legitimate Traffic j> Network Resiliency Test k> Max HTTP Throughput Test | |

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| 45 | <p>DUT Health Monitoring :-</p> <ul style="list-style-type: none">> Should also provide Solution to Check the Health of DUT for ex. CPU Utilization, DUT Status, etc. during the Testing and Generate the Test Report> Same Solution should also help User in Automating the DUT and Traffic Generator together without writing any scripts> Solution should support more than 30 Different Session Types to connect DUTs for ex. CLI, SSH, Telnet, NetConf, SNMP, Ranorex, Selenium, VNC Client, REST, Web Services, etc."> Should have testbed emulation inbuilt with automation support> Should have the support of Live Runtime debugging> Should be able to automate multi-platform environment (CLI, Web, GUI, mobile) on single framework> Should be able to perform multi-threading, parallel executions> Should have the feasibility to integrate with TCL, Python, etc. | |
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Annexure B

a. Enquiry No. SERC/NBK/AG/2019

b. Quantity required: 1 No

c. Technical Specifications

| Attack Generators – Technical Specifications | | |
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| Sl. No | Specifications | Compliance |
| 1 | The Attack generator has to have inherent ability to generate spam floods, malicious URL's, advanced persistent threats and should be available with latest updates and Solution should also support Cloud Database subscription update for 3 years | |
| 2 | The Attack generator shall emulate Known /published Distributed denial of services attacks at line rates at 10Gbps and 100Gbps but not limited the following with support for 3 years with updates | |
| 3 | Network Level DDoS attacks | |
| | ARP Flood attack | |
| | Ping of Death attack | |
| | Ping Sweep attack | |
| | .RST Flood attack | |
| | Smurf attack | |
| | TCP Port scan attack | |
| | Teardrop attack | |
| | . UDP Flood attack | |
| | UDP Portscan | |
| | Evasive UDP attack | |
| | Land Attack | |
| | XMAS Tree attack | |
| | TTL Expiry attack | |
| | IP options attack | |
| | Ip spoofing attack | |
| | TCP synflood attacks | |
| TCP Syn -Ack flood attack | | |
| Session hi-jacking | | |
| ICMP destination unreachable attack | | |
| ICMP Time exceed attack | | |
| FIN Flood attack | | |
| 4 | Application Layer Level DDoS attacks | |

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| | SIP Invite Flood attack | |
| | DNS Flood attack | |
| | HTTP GET Flood attack | |
| | HTTP POST Flood attack | |
| 5 | The traffic generator should support emulation of lifecycle of botnets of the world such as: | |
| | a. Cutwail | |
| | b. Zeus | |
| | c. SpyEye | |
| | d. ZeroAccess | |
| | e. Duqu | |
| | f. BlackEnergy | |
| | g. TDL4 | |
| | h. PushDO | |
| i. TDW etc | | |
| 6 | Publised Vulnerability support :- | |
| | The Attack generator should have a minimum of 3000 + published vulnerablity attack database and also with fortnightly upates with support for 3 years | |
| 7 | The Attack generator should have a minimum of thirty thousand plus Malware database and also with fortnightly updates with support for 3 years | |
| 8 | Attack generator should also Testing for DLP(Data Leak Protection) in Firewall devices under which can simulate real-world application traffic, user behavior, and any type of sensitive data in embedded text or attached files. | |
| 9 | The Attack generator solution must be capable of generating reports in readable form such as PDF, RTF, and export formats such as CSV and XML | |
| 10 | All applications and their actions in the Attack generator must be user customizable and they should also come with default of set of test plans | |

