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A mini ratna enterprise

Corrigendum -II

Sub: Request for proposals for "**Supply, Installation, Integration, Customization, Testing, Training & Commissioning of AAA and B/OSS Infrastructure for Wi-Fi and Broadband Services for RailTel**"

Ref: i) This office Tender No. RAILTEL/TENDER/OT/CO/DNM/2017-18/AAA and BSS&OSS/389 Dated: 19.05.2017

In **reference** to the above referred Tender, the following amendments are issued in the Tender document. The bids may be submitted in consideration of these amendments.

1. **Item no. 6 of SOR, Chapter-2 may be read as:**
   The tenderer should supply 4 Manageable L3 switch with 48 port including four 10G Ethernet SFP+ ports, dual AC power supply & NEBS certified out of which 2 will be deployed at DC site and 2 at DR site.

2. **Clarification against Item no. 13 & 14 of SOR, Chapter-2:**

   For item no. 13 AMC charges per annum for 4 years after FAC as percentage of overall cost of software items covered in Schedule of Supplies item no. 2 above, as per the terms & conditions of tender document, Railtel will evaluate total cost of ownership based on quantity specified which is 5 as warranty period till FAC is 1 year.

   For item no. 14 AMC charges per annum for 4 years after FAC as percentage of overall cost of third party software items covered in Schedule of Supplies item no. 3 & 5 above, as per the terms & conditions of tender document which is 5 as warranty period till FAC is 1 year.

3. **Clause no. 3.7.2 of SYSTEM ENGINEERING GUIDELINES, Chapter-3C may be read as:**
   System can be designed in active-active or active-passive however SLA of 99.95% has to be maintained by the bidder.

4. **Clarification against Clause no. 1.9.1 chapter-3A and 1.1.3, chapter-3B:**
   Unified license cost is required which can be for Wi-fi, broadband and enterprise customers

5. **Clarification against Clause no. 2 of Scope of Work Proposed Architecture & Solution Diagram, Chapter-3B:**
   Providing WAG functionality and solution will not be part of scope of work however integration of WAG with the proposed solution will be part of scope of work.
   DPI and layer 7 functionalities are not part of this tender as this will be part of the other tender.

As the B/OSS infrastructure will be deployed in the RailTel datacenter so existing data center set up shall be used. However, Bidder has to provide complete technical solution in their write up so that

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as per that RailTel can provision their requirement through their existing firewall and load balancers.

6. **Clause no. 2 of Scope of work chapter 3B and point 7 clause no. 3.5.9 and clause 3.5.10 chapter 3C related to CRM/Ticketing system, Chapter-3 may be read as:**
Ticketing system in their solution will be used for initial period till RailTel deploy their own ticket solution. In the final roll out the system should be able to integrate with new ticketing system of RailTel.

7. **Clarification against Point 4 i) Clause no. 1.3 of PQC & Evaluation of offers, chapter-4B:**
Portal shall support as much languages as possible and it should be configurable based on device locale.

8. **Clause 2.1.1 Techno-Commercial Capability- Product supplier's Credibility, Chapter-4B may be read as:**
For point **Product supplier's Credibility** No. of References in Telco environment with scale of 1 Million Concurrent Users, 1 million concurrent users is required from a single operator.

9. **Clause 2.1.1 Techno-Commercial Capability- Product Maturity, Chapter-4B may be read as:**
For point Certifications/Accolades & eTOM alignment under product maturity, eTOM alignment certificate requirement is removed.

10. **Clause 3.5.12 TECHNICAL REQUIREMENTS & SPECIFICATIONS, chapter-3C:**
System should support forwarding of AAA logs in TCP and UDP format to other system as per the requirement.

11. **Clarification against Point a) Clause 4.1 Design of System, chapter-3D :**
Bidder has to abide by the IT act of govt. organisation.

12. **Clarification against Clause 4.10 Proof of Concept (POC) Testing , chapter-3D :**
Clause will remain as per the tender.

13. **Clarification against Point no. IV-c Schedule of Requirement(SOR), chapter-2 may be read as:**
Dedicated link between DC and DR site will be provided by RailTel.

14. **Point b) Clause 1.1 of Experience: Non Functional PQC, chapter-4B may be read as:**
    i) SI's experience in implementation of AAA and B/OSS Infrastructure System with Indian/Global Telecom Service Provider: references required.
    ii) OEM's reference for AAA and B/OSS Infrastructure System with Indian/Global Telecom Service Providers or Tier-1 or Tier-2 Telecom Service providers.
    iii) OSSP/OEM's should have Deployed and Working Solution of AAA and B/OSS Infrastructure for 1 Lakhs Concurrent Users with Indian/Global Telecom Service Providers or Tier 1 or Tier 2 Telecom Service Providers.

15. **Clarification against Point no. 5.11.1 of Clause 5.11, chapter-3E:**
Type Test, Environment and Immunity/Emission test is applicable for Equipment/HW.

16. **Clarification against clause no. 5.1 Payment terms, chapter-4A:**
The tenderer needs to submit only document relevant to Software and hardware items.

17. **Point no. 11 Clause-1.3 Technical Capabilities, chapter-4B may be read as:**
DPI and Layer 7 inspection of content to throttle or drop applications/protocols is not in scope of this tender.

18. **Clarification against Point 11-e and l , Clause 1.3 Technical Capabilities, chapter-4B:**
WAN load balancer is not in scope of this tender.

19. **Clarification against Point 11-p , Clause 1.3 Technical Capabilities, chapter-4B:**
The solution should have app for mobile and browser for laptop/desktop and for saving username and password, user does not need to enter username and password and will get automatically connected.

20. **Clarification against Point no. 13, Clause 1.3 Technical Capabilities, chapter-4B**:
NAT and protocol based log monitoring scope is defined in Annexure-I of corrigendum-II .

21. **Point no. a) clause 1.1, Turn over criteria, chapter-4B may be read as:**
Bidder (SI/OEM): INR 9 Cr for Telecom & IT business cumulative in last 3 financial years including this year. Pre-qualification Criteria to include the turnover of the parent company having similar SI Experience.

22. **Clarification against Clause no. 3.5.11 EMS(Monitoring System), chapter- 3C:**
Bidder shall provide the monitoring of the system and modules covered in scope of the tender.

23. All other terms and conditions will remain same.

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(A.K.Sablania)
Group General Manager/DNM

Annexure-I

NAT and protocol based log monitoring System

1. The system must be able to accept Netflow data from Cisco routers, Cflowd from Juniper and Alcatel routers and Sflow data from Foundry or other Sflow based routers. The system must support Netflow versions 1, 3, 5, 7 or 9, Cflow versions 5, 9 and Sflow version 2, 4, 5 and IPFIX.
2. The solution must be able to collect up to 1000k flows per second. The solution should be scalable to support 2500k Flows per second .
3. The system must be able to replicate ("tee") received Netflow data and export it to other Netflow receivers in the network.
4. The system must be scalable to be able to monitor up to 2000 routers and 100,000 interfaces.
5. The collector shall be supplied as software installable version on Linux x86-64 based servers.
6. The collector should be able to function as a store and forward node. This is required when flows need to be aggregated per city and processed at a central location. This is also needed to ensure no logs are lost of the central log collection facilities become unreachable due to interconnect issues.
7. Each collector node should be able to injest IPFix/Netflow data from at least 100 network nodes .
8. The following RFCs should be supported the IPFix/Netflow nodes
    a. RFC 7011 - Specification of the IP Flow Information Export (IPFIX/NETFLOW) Protocol for the Exchange of Flow Information
    b. RFC 6313 - Export of Structured Data in IP Flow Information Export (IPFIX/NETFLOW).
9. Collector Protocols. The collector shall be able to collect IPFix/Netflow data over the following protocols:
    a. UDP
    b. TCP
    c. TCP with TLS 1.1 or better
    d. SCTP
10. Multiple Collectors should be able to work as a cluster to share load from different exporters.
11. It should be possible to configure ACL (Access Control Lists) for collectors from the management UI.
12. Health statistics of each collector in the cluster should be available, and should measure at least the following:
    a. Number of exporters concurrent (for UDP, a configurable timeout after which the exporter should not be counted as active)
    b. Number of IPFix/Netflow records exported in that session
    c. Number of IPFix/Netflow records not processed due to unknown template
    d. Number of IPFix/Netflow records processed.

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c. The system must be able to generate an alert due to a system error/over-load condition, e.g. process error, not getting flows and etc

13. Installation of the collector may be via CLI, however all management and operators of the collector shall be through WEB-GUI only.
14. Management Application

    a. Application should be driven via a roles and rights managed system
    b. Authentication of users shall be configurable and should support the following as a minimum:
        i. Internal User lists.
            1. It should be possible to define the password policy
        ii. External MySQL database table
        iii. External PostgreSQL database table
        iv. External LDAP server
        v. External Active Directory
        vi. External RADIUS server

    c. Management application should be able to manage stored data, it's archival, restore from archives and general information about it
15. AS Numbers – it should be possible to enrich the flow data by storing source and destination AS numbers based on source and destination IP addresses
16. Security – TLS mode
    a. It should be possible to create a CA and issue certificates.
    b. It should be possible to install public certificate of a CA to ensure only devices with certificates from trusted sources are accepted
17. Reports – Following analytics must be available
    a. AS number source and destination matrix based on packets and bytes (volume of traffic)
    b. Top sources (IPv4 & IPv6) and top destinations (IPv4 & IPv6)
    c. URLs, FQDNs from URLs
    d. Top utilization by username
    e. NAT Utilization Report
    f. Ability to schedule report and FTP/Emailed
    g. Trends and reports for volume of data stored, archived and available
18. High Availability
    a. Data should be stored internally in format that is resilient to failure of storage nodes. An example of this is storing data in backend with concepts of shards and replica sets.
19. Data Search
    a. Data should be searchable on all attributes present in the flows as sent by network devices .
    b. Data should be searchable on all meta attributes of the flows such as AS numbers, zone the network device is installed in.
    c. Since the quantum of data can get quite large, it should be possible to set searchable indexes per device, per day/hour
    d. These search indexes should automatically be archived to reduce storage overhead and search scope.
    e. It should be possible to use large file systems such as Hadoop's HDFS to move the archival data . It should be integrated with RailTel Hadoop's HDFS.
    f. It should be possible to use large file systems such as Hadoop's HDFS to move indexes to for off-search-index storage. It should be possible to move such indexes back to searchable scope via admin GUI.
    g. Data should be stored in JSON format. Data may be stored in binary format while it is being transmitted from store-and-forward node to main cluster.

h. Data should be searchable for NAT logs present in the flows as sent by network devices . The following fields MUST be searchable
   a) Source IP with Username (In case of Broadband User . Radius Accounting Logs should be integrated with searchable engine) .
   b) Source Port
   c) Destination IP
   d) Destination Port
   e) NATed IP
   f) NATed Port
   g) Timestamp

i. Search shall be type specific.
   i. IPv4/IPv6 address attributes, it should be possible to search by single IP or subnet
   ii. Text attributes: exact, substring, case sensitive and case non-sensitive

20. Product installation
   a. It should be possible to install the product on dedicated servers
   b. It should be possible to install the product on virtual machines
   c. Product should be provided as docker images

21. Events
   a. It should be possible to setup webhooks/AMQP messages of the flow in JSON format when specific value in a flow is seen. For example, copy all flows (JSON) to a specific topic on AMQP when username matches a given value.

22. APIs
   a) All management functions should be usable via external API clients.
   b) RESTful API should be provided

23. Capacity Required

a) The Netflow/IPFIX collector should be provide at Delhi , Mumbai ,Chennai and Kolkata . The Netflow/IPFIX collector should support following minimum configuration.

1	Minimum Flow receive rate Per Collector/receiver at Delhi, Mumbai ,Chennai and Kolkata .	Min 300,000 Flows/Second
2	Searchable Flows within the platform	6 TB (with RAID 10) with 500 GB SSD cache .
3	Network Interfaces – Flow Collector/receiver	Min 2x10G ports
4	Network Interfaces – Management	1G or 10G Multiple Ports.
5	Redundant Power Supply	AC
6	Management Interface	Yes

a) Centralized System for Management application should be provided at Gurgaon and Secundrabad with following minimum configuration.

1	Storage Capacity	50 TB with RAID 10 and scalable with 500 TB with or without additional Hardware

2	Management Interface	Yes
3	Network Interfaces	Min 2x10G ports
4	Network Interfaces – Management	1G or 10G Multiple Ports.
5	Redundant Power Supply	AC