NATIONAL PAYMENTS CORPORATION OF INDIA

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Annexure A

Corrigendum-1

This is with reference to NPCI's EOI no. EOI no. NPCI/EOI/2024-25/01 dated 30th April 2024- EOI for identifying Hardware Platform agnostic Network Operating System (NOS) Solution. The prospective bidders may please note the following changes:

Sr.	Document Reference	Description	Existing EOI Clause	Amended clause vide this note
1	Page 6	Notice inviting Expression of Interest (EOI) for identifying Hardware Platform agnostic Network Operating System (NOS) Solution	NPCI invites proposals from NOS suppliers who have experience in supplying, implementing, and supporting Hardware Platform agnostic Network Operating System (NOS) solution.	NPCI invites proposals from NOS suppliers who have experience in supplying, implementing, and supporting Hardware Platform agnostic Network Operating System (NOS) solution. NOS software should have the capability to work across • Multiple processor vendors • Multiple processor types • Multiple ODM members
2	Page 37	ANNEXURE L - Technical Specifications	As per EOI	As per **Table 1** mentioned below.

Table 1:

ANNEXURE L - Technical Specifications (Revised)
(Bidder's Letter Head)

Indicative functionalities are mentioned below:
We hereby declare that all the above stated indicative functionalities and any other additional functionality that NPCI may require would be made available in the solution.

A. NOS Features:

Sr.no	NOS required features		Complied (Yes/ No) (To be filled in by the bidder)
	Functionality	**Description**	
1.	Operating System	Hardware Platform agnostic NOS (Linux based preferred)	
2.	Hardware Layer Management	Hardware adaptation layer to support different merchant-silicon SDKs and a variety of Board Support Packages (BSP) from a collection of ODMs	
3.	Layer 2 Features	▪ Spanning Tree Protocol (STP) ▪ L2/L3 port channel, LACP ▪ L2 security: Bridge isolation, BDU guard, storm control ▪ VRRP ▪ DHCP relay	

4.	IP / Layer 3 Features	▪ IPv4/IPv6 routing: Static, IS-IS, IS-IS-MT, OSPF ▪ BGP (iBGP, eBGP, L3VPN, LS-SPF, LSVR underlay PIC Edge, next hop tracking, 4-byte ASN, BGP Aggregate…), VRF support. ▪ BFD IPv4/IPv6 for BGP, IS-IS, connected, and static ▪ Micro-BFD for L3 LAG (RFC 7130) ▪ 128-way ECMP and resilient hashing ▪ IPv4 over IPv6 and IPv6 over IPv4 VXLAN	
5.	Control Plane Scale	▪ Minimum 1 M IPv4 and 200 K IPv6 routes ▪ Convergence around 60 - sec ▪ H/W programming time – around 40 sec ▪ H/W programming rate – around 30K routes/sec	
6.	Overlay / VPN Features	▪ EVPN/VXLAN ▪ EVPN/MPLS ▪ L3VPN over SRv6 ▪ L3VPN over MPLS	
7.	Resiliency	▪ Process restart ability (support for BGP, RIB, FIB, IS-IS, OSPF, RPOL) Graceful Restart (BGP, IS-IS) ▪ BGP graceful shutdown ▪ Non-stop forwarding (NSF) ▪ Maintenance Mode (BGP, IS-IS, OSPF) ▪ Rapid Software Upgrade (RSU)	
8.	QoS and Security	▪ Queuing/Scheduling (DWRR, WRED, ECN, strict priority), shaping BGP MD5 auth, TTL ▪ BGP Flow spec ▪ ACL: L2, IPv4, IPv6, TCP flags, UDF- based CoPP, Control-Plane ACL ▪ DSCP/MPLS EXP based classification and marking Policer 1r2c (Actions: Tx, Drop) Ingress/Egress	
9.	Network Management and Monitoring	▪ LLDP ▪ Management over IPv4 and IPv6 ▪ SSHv2 ▪ Port Mirroring ▪ Packet Mirroring to CPU w/ filtering ▪ Syslog ▪ AAA ▪ SNMP ▪ SNMP MIBs ▪ SNMP walk, get ▪ 3rd-party integrations – Ansible – Prometheus	
10.	Telemetry	▪ sFlow® gNMI ▪ Streaming platform: Kafka ▪ Data format: JSON ▪ Platform hardware state ▪ Resource utilization events Control plane state (RIB, BGP, etc.) and statistics ACL, interface statistics ▪ SRv6 statistics ▪ Prometheus	
11.	Programmable Frameworks	▪ REST API ▪ RESTCONF ▪ NETCONF ▪ Open Config YANG models	
12.	Timing/Synchronization	PTP/1588 • T-BC, T-TC	

B. **Broad network hardware configuration:**

Sr. No.	Network hardware configuration features (To be provided by network team)	Complied (Yes/ No) (To be filled in by the bidder along with sharing exact part code wise configuration for at least 2 certified network hardware suppliers)
1	• Leaf Switch – 10/25 Gig 48 access ports + 100 Gig uplink ports (6 to 8 no's) and 1 Gig management port • Dual power source	
2	• Spine / Supper Spine switch - 100/400 Gig 32 ports or more and 1 Gig management port • Dual power source	

C. **Software**: Open Programmable API based operating system

D. **Other required features:**
- The Solution should be scalable and interoperable.
- The solution should be hardware independent in future.

(Signature)

(Name)
(In the capacity of)
Duly authorized to sign Bid for and on behalf of