Power Grid Company of Bangladesh Limited (PGCB)

Supply and installation for upgradation/modernization of NLDC's SCADA/EMS system (Telecommunication system and RTU/Gateways) Package-3, Lot-4

Memo No: 27.21.0000.101.07.422.23.5755, Date: November 23, 2023

RFB Reference No.: PGCB/WB/BPSREIP/P-3/LOT-4

Addendum-01

Issued on 24.12.2023

Following revisions/ changes are made in the bidding Document which will form part of the bidding Document.

Volume 1 of 2

Sl-01. Volume-1, Section IV, Bidding Forms Form of Curriculum Vitae (CV), Page 70

The text-

"{List all deliverables/tasks as in TECH- 5 in which the Expert will be involved)" is deleted.

Volume 2 of 2

Sl-02. Volume-2, 11. List of Goods and Delivery Schedule, Page-32

Item-14 is revised as follows

Item No.	Description of Goods	Quantity	Physical unit	Final Destination (Project Site) as specified in BDS	Delivery (as per Incoterms) Date			Functionality
14.	Contact Multiplier Relay (CMR)	74	set	Substation (name of substations will be clarified in detail design stage)	120 Days	150 Days		

SI-03. Volume-2, Schedule B1: Goods of IP/MPLS+MPLS-TP Telecommunication Network Equipment and SCADA Gateway

Item-14 is revised as follows

Item No.	Description of Equipment Requirement	Unit	Quantity	Foreign Currency (in)		Remark
				Unit Price	Total Price	
			(1)	*(2)*	*(3) = (1) x (2)*	
14.	Contact Multiplier Relay (CMR)	set	74			

SI-04. Volume-2, 1.1 Description of Overall Project, page 6

The text-

"IP/MPLS with MPLS-TP capability"

is replaced by

"IP/MPLS".

SI-05. Volume 2, 8. Technical Data Schedules, Router Datasheet

NO.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
1.	Country of origin= USA or European Countries			
2.	Redundant processor module			
3.	ACL - Access Control List Source and Destination Address Matching			
4.	ATM/IMA/PPP/MLPPP Support on OC3 Interface Module			
5.	802.1ad			
6.	Any Transport over MPLS (AToM): Ethernet over MPLS (EoMPLS)			
7.	Auto-IP			
8.	Auto Install Using DHCP for LAN Interfaces			
9.	Autoroute announce and forwarding adjacencies for OSPFv3 over IPv4 TE tunnels			
10.	BFD - BFD Hardware Offload Support			
11.	BFD Support for Multicast (PIM)			
12.	BGP - Accumulated IGP			
13.	BGP - iBGP NSR			
14.	BGP GSHUT enhancement			

NO.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
15.	BGP Monitoring Protocol			
16.	BGP PIC (edge & core) - for RFC-3107 labeled iBGP			
17.	BGP PIC Edge for IP/MPLS			
18.	BX optics			
19.	EVC Local Connect			
20.	EVPN VPWS			
21.	Egress QoS Support on MLPPP Bundle (Strict Priority Queuing)			
22.	Egress Shaping on MLPPP Bundle			
23.	Ethernet Data Plane Loopback			
24.	Ethernet Fault Detection			
25.	H-VPLS N-PE Redundancy for MPLS Access			
26.	IGMP State Limit			
27.	IOS VRF Multicast Multi-Topology Support			
28.	IP FRR over BDI			
29.	IP FRR/Remote LFA FRR with L2VPN			
30.	IPV6 MVPN with MLDP			
31.	IPv4 unicast routing support			
32.	IPv6 Multicast: PIM Source-Specific Multicast (PIM-SSM)			
33.	IPv6 Routing: IS-IS Support for IPv6			
34.	IPv6 Routing: OSPF for IPv6 (OSPFv3)			
35.	IPv6 Routing: Static Routing			
36.	IPv6 Services: Extended Access Control Lists			
37.	IPv6 Switching: CEF/dCEF Support			
38.	IPv6 VPN over MPLS (6VPE)			
39.	IS-IS - MPLS LDP Autoconfiguration			
40.	ISIS IPv4 - link TI LFA FRR protection			
41.	Interfaces MIB: SNMP context-based access			
42.	L2VPN Protocol Base CLIs			
43.	L2VPN Protocol Based CLI			
44.	L2VPN: PW Status for Static PWs			
45.	L3 ATM support on RSP2 and ASR920			
46.	L3 Security ACL for EVC support			
47.	Label Switched Multicast (LSM) Multicast Label Distribution Protocol (MLDP) based Multicast VPN (MVPN) support			
48.	MPLS -TP: IP Less trace support (NodeId, LinkId)			
49.	MPLS LDP Auto config TE Tunnels (ISIS only)			
50.	MPLS TE - Bundled Interface Support (EtherChannel and MLP)			
51.	MPLS TP: IP-less configuration of MPLS TP tunnels			

NO.	Description		Minimum Requirements		Guaranteed
			Unit	Data	
52.	MPLS Traffic Engineering (TE) - Fast Reroute (FRR) Link and Node Protection				
53.	Model Based AAA				
54.	Multi-protocol BGP (MP-BGP) - MPLS VPN				
55.	OSPFv2 link-protection Topology Independent Loop Free Alternate Fast ReRoute				
56.	PPP				
57.	PPP MLP MRRU negotiation configuration				
58.	Policy-Based Routing (PBR)				
59.	QoS Priority Propagation in Multi-level Scheduler				
60.	RSVP - Resource Reservation Protocol				
61.	Remote LFA FRR and labeled BGP FRR integration				
62.	Routed Pseudo-Wire and Routed VPLS				
63.	Smart Licensing Client				
64.	Support for IEEE 1588-2008 Precision Clock Synchronization Protocol				
65.	Synchronous Ethernet (SyncE): ESMC & SSM				
66.	Uni Directional Link Detection Protocol				
67.	Unicast Reverse Path Forwarding (uRPF)				
68.	Unicast Reverse Path Forwarding (uRPF) Loose mode				
69.	VPLS BGP Signaling				
70.	Virtual Private LAN Services (VPLS)				
71.	WAN mode support				
	Physical Specifications				
72.	Rack mounts	ETSI rack-mount kit			
		19-in. rack-mount kit			
73.	Air flow	Modular far tray			
74.	Power supplies	1+1 DC power supplies			
75.	Mean time between failures (MTBF)	Min 300,000 Hours			
	Power Specifications				
76.	Power consumption	Max 150W, Typical: 130W (without PoE)			
77.	DC input voltage	Voltage range: -24 VDC to -60 VDC nominal -48VDC			
	Environmental Specifications				
78.	environment and altitude	Operation: -5 to 45°C, up to 1,000 feet (300m) Storage and transport: -40 to +70˚C			

NO.	Description		Minimum Requirements		Guaranteed
			Unit	Data	
79.	Relative humidity	95 percent, noncondensing			
80.	Acoustic noise	Acoustic noise peak operation maximum 59 dBA, sound pressure level, bystander position for rack-mount products at 20°C operation as measured by ISO 7779 NAIS noise measurement test standard. Acoustic noise peak operation compliant to the Network Equipment Building Standards (NEBS) GR-63-Core Issue 3 sound power level of 78 dB at 27°C operation as measured by the ANSI S12.10/ ISO 7779 NAIS noise measurement test standard.			
81.	Storage environment	Temperature: -40 to 70°C altitude: 15,000 feet (4570m)			
	Safety and Compliance				
82.	Safety	UL 60950-1, 2005			
83.		CAN/CSA C22.2 No. 60950-1: 2005			
84.		IEC 60950-1, 2005			
85.		EN 60950-1, 2005			
86.		AS/NZS 60950.1:2005			
87.	Electromagnetic	FCC CFR47 Part 15 Class A			
88.	Emissions compliance	EN55022, class A			
89.		CISPR22, class A			
90.		ICES-003, class A			
91.		EN 300 386, class A			
92.		VCCI, class A			
93.		KN22, class A			
94.		EN61000-3-2 to EN61000-3-3			
95.	Immunity compliance	EN 300 386			
96.		EN 61000-6-1			
97.		EN 50082-1			
98.		CISPR24			
99.		EN 55024			
100.		KN 24			
101.		EN 50121-4			
102.		EN/KN 61000-4-2 to EN/KN 61000-4-6			
103.		EN/KN 61000-4-8			

NO.	Description		Minimum Requirements		Guaranteed
			Unit	Data	
104.		EN/KN 61000-4-11			
105.	Power substation system compliance	IEC-61850-3 (2002)			
106.		IEEE1613 (2009)			
107.	NEBS	GR-63-CORE			
108.		GR-1089-CORE			
109.		SR-3580 NEBS Level 4			
110.	ETSI	ETS/EN 300 119 Part 4			
111.		ETS/EN 300 019 - Storage: Class 1.2, Transportation: Class 2.3, In-Use/Operational: Class 3.2			
112.		ETS/EN 300 753			
113.	Network synchronization	ANSI T1.101			
114.		GR-1244-CORE			
115.		GR-253-CORE			
116.		ITU-T G.703 clause 5			
117.		ITU-T G.703 clause 9			
118.		ITU-T G.781			
119.		ITU-T G.813			
120.		ITU-T G.823			
121.		ITU-T G.824			
122.		ITU-T G.8261/Y.1361			
123.		ITU-T G.8262			
124.		ITU-T G.8264			
125.		IEEE1588-2008			
	Module				
126.	Line card redundancy	supported			
127.	Port density	Minimum 8-port 10/100/1000, RJ45			
128.	Environmental specifications	–40 to 65°C (–40 to 149°F) operating temperature (using Industrial temperature XFP, SFP, and SFP+ optics) 0 to 40°C (32 to 104°F) operating temperature (CPAK and QSFP optics)			
129.	Relative humidity	5 to 95%, noncondensing			
130.	Storage environment	Temperature: –40 to 70°C (–40 to 158°F) altitude: 4570 m (15,000 ft)			
131.	MTBF at 40°C (104°F) operating temperature	Minimum 300,000 hours			
132.	Reliability and availability	OIR field-replaceable SFP optics modules			

NO.	Description		Minimum Requirements		Guaranteed
			Unit	Data	
133.		Support for both 1+1 SONET Automatic Protection Switching (APS) and SDH Linear Multiplexer Section Protection (MSP) protocols			
134.		Single interface module software reset			
135.		Rolling software upgrade, interface module by interface module			

is replaced by the following table:

NO.	Description	Minimum Requirements		Guaranteed
		Unit	Data	
1.	Country of origin= USA or European Countries			
2.	Redundant processor module			
3.	ACL - Access Control List Source and Destination Address Matching			
4.	SONET OC3/OC12			
5.	802.1ad			
6.	HDLC/ PPP/ Ethernet over MPLS			
7.	Auto-IP			
8.	Auto Install Using DHCP for LAN Interfaces			
9.	Autoroute announce and forwarding adjacencies for OSPFv3 over IPv4 TE tunnels			
10.	BFD - BFD Hardware Offload Support			
11.	BFD Support for Multicast (PIM)			
12.	BGP - Accumulated IGP			
13.	BGP - iBGP NSR			
14.	BGP GSHUT enhancement			
15.	BGP Monitoring Protocol			
16.	BGP PIC (edge & core) - for RFC-3107 labeled iBGP			
17.	BGP PIC Edge for IP/MPLS			
18.	BX optics			
19.	EVC Local Connect			
20.	EVPN VPWS			
21.	Ethernet Fault Monitoring			
22.	H-VPLS N-PE Redundancy for MPLS Access			
23.	IGMP State Limit			

<table>
<tr><th rowspan="2">NO.</th><th rowspan="2" colspan="2">Description</th><th colspan="2">Minimum Requirements</th><th rowspan="2">Guaranteed</th></tr>
<tr><th>Unit</th><th>Data</th></tr>
<tr><td>24.</td><td colspan="2">Multicast VRF</td><td></td><td></td><td></td></tr>
<tr><td>25.</td><td colspan="2">IP FRR over BDI</td><td></td><td></td><td></td></tr>
<tr><td>26.</td><td colspan="2">IP FRR/Remote LFA FRR with L2VPN</td><td></td><td></td><td></td></tr>
<tr><td>27.</td><td colspan="2">IPv6 Support</td><td></td><td></td><td></td></tr>
<tr><td>28.</td><td colspan="2">IPv4 unicast routing support</td><td></td><td></td><td></td></tr>
<tr><td>29.</td><td colspan="2">Interfaces MIB: SNMP context-based access</td><td></td><td></td><td></td></tr>
<tr><td>30.</td><td colspan="2">L2VPN</td><td></td><td></td><td></td></tr>
<tr><td>31.</td><td colspan="2">L3 Security ACL</td><td></td><td></td><td></td></tr>
<tr><td>32.</td><td colspan="2">Label Switched Multicast (LSM) Multicast Label Distribution Protocol (MLDP) based Multicast VPN (MVPN) support</td><td></td><td></td><td></td></tr>
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<tr><td>39.</td><td colspan="2">OSPFv2, OSPFv3</td><td></td><td></td><td></td></tr>
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<tr><td>43.</td><td colspan="2">Pseudo-Wire</td><td></td><td></td><td></td></tr>
<tr><td>44.</td><td colspan="2">IEEE 1588-2008</td><td></td><td></td><td></td></tr>
<tr><td>45.</td><td colspan="2">Synchronous Ethernet (SyncE)</td><td></td><td></td><td></td></tr>
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<tr><td>48.</td><td colspan="2">VPLS BGP Signaling</td><td></td><td></td><td></td></tr>
<tr><td>49.</td><td colspan="2">Virtual Private LAN Services (VPLS)</td><td></td><td></td><td></td></tr>
<tr><td>50.</td><td colspan="2">Number of supported VLANs: Min 1024</td><td></td><td></td><td></td></tr>
<tr><td>51.</td><td colspan="2">number of transits LSP: Min 1024</td><td></td><td></td><td></td></tr>
<tr><td>52.</td><td colspan="2">MAC address table size: Min 10 K</td><td></td><td></td><td></td></tr>
<tr><td>53.</td><td colspan="2">VPLS instances: Min 512</td><td></td><td></td><td></td></tr>
<tr><td>54.</td><td colspan="2">L2VPN : 1000</td><td></td><td></td><td></td></tr>
<tr><td></td><td colspan="2">Physical Specifications</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">55.</td><td rowspan="2">Rack mounts</td><td>ETSI rack-mount kit</td><td></td><td></td><td></td></tr>
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<tr><td>56.</td><td>Air flow</td><td>Modular far tray</td><td></td><td></td><td></td></tr>
<tr><td>57.</td><td>Power supplies</td><td>1+1 DC power supplies</td><td></td><td></td><td></td></tr>
</table>

NO.	Description		Minimum Requirements		Guaranteed
			Unit	Data	
58.	Mean time between failures (MTBF)	Min 300,000 Hours			
	Power Specifications				
59.	Power consumption	Calculated by vendor per node			
60.	DC input voltage	Voltage range: -24 VDC to -60 VDC nominal -48VDC			
	Environmental Specifications				
61.	environment and altitude	Operation: -5 to 55°C, up to 1,000 feet (300m) Storage and transport: -40 to +70°C			
62.	Relative humidity	95 percent, noncondensing			
63.	Acoustic noise	Acoustic noise peak operation maximum 59 dBA, sound pressure level, bystander position for rack-mount products at 20°C operation as measured by ISO 7779 NAIS noise measurement test standard. Acoustic noise peak operation compliant to the Network Equipment Building Standards (NEBS) GR-63-Core Issue 3 sound power level of 78 dB at 27°C operation as measured by the ANSI S12.10/ ISO 7779 NAIS noise measurement test standard.			
64.	Storage environment	Temperature: -40 to 70°C altitude: 15,000 feet (4570m)			
	Safety and Compliance				
65.	Safety	UL 60950-1, 2005			
66.		CAN/CSA C22.2 No. 60950-1: 2005			
67.		IEC 60950-1, 2005			
68.		EN 60950-1, 2005			
69.		AS/NZS 60950.1:2005			
70.	Electromagnetic	FCC CFR47 Part 15 Class A			
71.	Emissions compliance	VCCI, class A			
72.		EN61000-3-2 to EN61000-3-3			
73.	Power substation system compliance	IEC-61850-3 (2002)			
74.		IEEE1613 (2009)			
75.	ETSI	ETS/EN 300 119 Part 4			
76.		ETS/EN 300 019 - Storage: Class 1.2, Transportation: Class 2.3, In-Use/Operational: Class 3.2			

NO.	Description		Minimum Requirements		Guaranteed
			Unit	Data	
77.		ETS/EN 300 753			
78.	Network synchronization	ANSI T1.101			
79.		GR-1244-CORE			
80.		GR-253-CORE			
81.		ITU-T G.703 clause 5			
82.		ITU-T G.703 clause 9			
83.		ITU-T G.781			
84.		ITU-T G.813			
85.		ITU-T G.823			
86.		ITU-T G.824			
87.		ITU-T G.8261/Y.1361			
88.		ITU-T G.8262			
89.		ITU-T G.8264			
90.		IEEE1588-2008			
	Module				
91.	Line card redundancy	supported			
92.	Port density	Minimum 8-port 10/100/1000, RJ45			
93.	Environmental specifications	–40 to 65°C (–40 to 149°F) operating temperature (using Industrial temperature XFP, SFP, and SFP+ optics) 0 to 40°C (32 to 104°F) operating temperature (CPAK and QSFP optics)			
94.	Relative humidity	5 to 95%, noncondensing			
95.	Storage environment	Temperature: –40 to 70°C (–40 to 158°F) altitude: 4570 m (15,000 ft)			
96.	MTBF at 40°C (104°F) operating temperature	Minimum 300,000 hours			
97.	Reliability and availability	OIR field-replaceable SFP optics modules			
98.		Support for both 1+1 SONET Automatic Protection Switching (APS) and SDH Linear Multiplexer Section Protection (MSP) protocols			
99.		Single interface module software reset			
100.		Rolling software upgrade, interface module by interface module			