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No: GEM/2021/B/1571122 dated: 04-10-2021/Corrigendum-II

Dated: 29.10.2021

CORRIGENDUM-II

Sub: “Supply of Cards/Modules for Upgradation/Expansion of existing MPLS Router through GeM”.

Ref: i) GeM E-Tender No. GEM/2021/B/1571122 dated: 04-10-2021.

ii) GeM E-Tender No. GEM/2021/B/1571122/Corrigendum-I dated: 25-10-2021.

In reference to the above referred tender, the following amendments in the tender document are issued:

S. No.	Tender Para, Clause No.	Tender Clause	Modified Clause
1	Annexure-I, Para 4 (Technical Specification), Clause No. 17	The Router Line Card shall support traffic interface mirroring in both ingress & egress directions for both IPv4 & IPv6. It should also be able to mirror local and multicast traffic.	The Router shall support traffic interface mirroring in ingress directions for both IPv4 & IPv6. It should also be able to mirror local and multicast traffic.
2	Annexure-I, Para 4 (Technical Specification), Clause No. 24 (Point No. xiii)	RFC3973 PIM DM	Deleted
3	Annexure-I, Para 4 (Technical Specification), Clause No. 24 (Point No. xix)	Shall support BFD : single hop, multi-hop and micro BFD	Shall support BFD: single hop and multihop and micro BFD OR BFD over Bundle (BoB)
4	Annexure-I, Para 4 (Technical Specification), Clause No. 29c	DWDM Optical module/OTN device shall provide following performance monitoring to health of circuit. i. Transmit Power ii. Receive Power	DWDM Optical module/OTN device shall provide following performance monitoring to health of circuit. i. Transmit Power ii. Receive Power

		iii. Wavelength (nm) or Frequency (THz) iv. Error Second v. Severe Error Second vi. Code Violation or Background Block Error vii. Unavailable Second	iii. deleted iv. Error Second v. Severe Error Second vi. Code violation or Pre-FEC BER (Block error ratio) vii. Unavailable Second
5	Annexure-I, Para 4 (Technical Specification), Clause No. 1	The Line Card and Interfaces are required for existing Router at Railtel Network i.e NCS5504 with IOS XR and MX480 /960 with Junos 17 or latest .The Router Line Card should have atleast 2 x100G line interfaces with QSFP28/CFP2/QSFP-DD Support Day 1 .	The Line Card and Interfaces are required for existing Router at Railtel Network i.e NCS5504 with IOS XR OR MX480 /960 with Junos 17 or latest .The Router Line Card should have atleast 2 x100G line interfaces with QSFP28/CFP2/QSFP-DD Support Day 1 .
6	Clause No. 7.1	Delivery Period given is 60 days	Delivery period may be modified to 120 days

Note: All other terms and conditions will remain unchanged.

(Krishan Lal Kataria)
GGM/O&M/NR
(For and behalf of RailTel Corporation of India Ltd.)

Annexure-I

1. Traffic Matrix

S. N.	Link	Capacity	Path
1	NDLS to Ghaziabad (Protected)	100G	Work: NDLS-Ghaziabad Protected: NDLS-NIC(SP)-Ghaziabad
2	Ghaziabad to Lucknow (Protected)	100G	Work: Ghaziabad- Moradabad-Lucknow Protected: Ghaziabad -Tundla-Lucknow
3	Lucknow to Mugalsarai (Protected)	100G	Work: Lucknow- Varanasi -Mugalsarai Protected: Lucknow- Allahabad Mugalsarai
4	Mugalsarai-Asansol (Protected)	100G	Work: Mugalsarai-Patna Asansol Protected: Mugalsarai- Gaya-Asansol
5	Asansol-Kolkatta (Protected)	100G	Work: Asansol- Durgapur -Kolkatta Protected: Asansol- Kharagpur -Kolkatta

Note: - Bidder can propose Regeneration (3R) at OADM Locations, if required.

2. Fiber Losses & Distance of NDLS (Delhi) to Asansol

SN	END A	Node Type	END B	Node Type	Fiber Length (in Km)	Fiber Type (G652D or not)	1 st Fiber Loss (in dBm)	2 nd Fiber Loss (in dBm)
1	NDLS	OADM	NIC-SP	OADM	8.7	G652D	26.8	26.8
2	NIC-SP	OADM	Ghaziabad	OADM	20	G652D	32.8	32.8
3	Ghaziabad	OADM	Khurja	ILA	69.45	G652D	32.1	32.1
4	Khurja	ILA	Aligargh	ILA	49.22	G652D	24.3	24.3
5	Aligargh	ILA	Pora	ILA	46	G652D	24.9	24.9
6	Pora	ILA	Tundla	OADM	43.26	G652D	20.7	20.7
7	Tundla	OADM	Sikohabad	ILA	43.53	G652D	23.1	23.1
8	Sikohabad	ILA	Etawa	ILA	61	G652D	28	28
9	Etawa	ILA	Phaphund	ILA	58	G652D	28.1	28.1
10	Phaphund	ILA	Rura	ILA	58	G652D	22.8	22.8
11	Rura	ILA	Kanpur	OADM	45	G652D	25.1	25.1
12	Ghaziabad	OADM	Hapur	ILA	41.9	G652D	25.5	25.5
13	Hapur	ILA	Gajrola	ILA	54.8	G652D	23.7	23.7
14	Gajrola	ILA	Moradabaad	ILA	58.5	G652D	28	28
15	Moradabaad	OADM	Rampur	ILA	32	G652D	18.7	18.7
16	Rampur	ILA	Bareilly	ILA	70	G652D	32	32
17	Bareilly	ILA	Shajahanpur	ILA	80	G652D	33.9	33.9
18	Shajahanpur	ILA	Hardoi	ILA	69	G652D	29.1	29.1
19	Hardoi	ILA	Balamau	ILA	35	G652D	14.7	14.7
20	Balamau	ILA	Lucknow	OADM	82	G652D	35.6	35.6
21	Lucknow	OADM	Ajgain	ILA	45	G652D	23.1	23.1
22	Ajgain	ILA	Kanpur	OADM	39	G652D	19.6	19.6
23	Kanpur	OADM	Aung	ILA	43.7	G652D	29	29
24	Aung	ILA	Fatehpur	ILA	39.8	G652D	23.2	23.2
25	Fatehpur	ILA	Katoghan	ILA	43.1	G652D	25.7	25.7
26	Katoghan	ILA	Bharwari	ILA	42.2	G652D	23.8	23.8

27	Bharwari	ILA	Allahabad	OADM	43.1	G652D	23.1	23.1
28	Allahabad	OADM	Mejaroad	ILA	42.16	G652D	23.1	23.1
29	Mejaroad	ILA	Vindhyachal	ILA	46	G652D	26.9	26.9
30	Vindhyachal	ILA	Chunar	ILA	43.2	G652D	21.8	21.8
31	Chunar	ILA	Mugalsarai	OADM	37	G652D	24.9	24.9
32	Lucknow	OADM	Haidergargh	ILA	60	G652D	32	32
33	Haidergargh	ILA	Nihalgargh	ILA	32	G652D	22	22
34	Nihalgargh	ILA	Sultanpur	ILA	53	G652D	26	26
35	Sultanpur	ILA	Srikrishnanagar	ILA	63	G652D	33	33
36	Srikrishnanagar	ILA	Jaunpur	ILA	40	G652D	25	25
37	Jaunpur	ILA	Varanasi	ILA	65	G652D	30	30
38	Varanasi	ILA	Mugalsarai	OADM	22.4	G652D	13.4	13.4
39	Mugalsarai	OADM	Babua Road	ILA	61.572	G652D	26.2	28.2
40	Babua Road	ILA	Sasaram	ILA	52.362	G652D	22.93	22.93
41	Sasaram	ILA	Rafiganj	ILA	67.8	G652D	23.73	23.73
42	Gaya	ILA	Rafiganj	ILA	45	G652D	18	18
43	Gaya	ILA	Paharpur	ILA	38.23	G652D	19.12	19.12
44	Paharpur	ILA	Koderma	ILA	53.518	G652D	32.91	32.91
45	Koderma	ILA	Parasnath	ILA	83.8	G652D	32.35	32.35
46	Parasnath	ILA	Dhanbad	ILA	54.539	G652D	22.91	22.91
47	Dhanbad	ILA	Asansol	OADM	69.532	G652D	29.20	29.20
48	Mugalsarai	OADM	Zamania	ILA	48.359	G652D	20.31	20.31
49	Zamania	ILA	Buxar	ILA	52.933	G652D	22.23	22.23
50	Buxar	ILA	ARA	ILA	74.651	G652D	31.35	31.35
51	ARA	ILA	Patna	ILA	57.304	G652D	24.07	24.07
52	Patna	ILA	Bhaktiyarpur	ILA	49.9	G652D	20.96	20.96
53	Bhaktiyarpur	ILA	Mokama	ILA	50.86	G652D	21.36	21.36
54	Mokama	ILA	Kiul	ILA	39.015	G652D	16.39	16.39
55	Kiul	ILA	Jhajha	ILA	59.26	G652D	22.62	22.62
56	Jhajha	ILA	Jasidih	ILA	49.54	G652D	18.53	18.53
57	Jasidih	ILA	Madhupur	ILA	31.12	G652D	14.32	14.32
58	Madhupur	ILA	Asansol	OADM	90.51	G652D	35	35
59	Allahabad	OADM	Shankergarh	ILA	48.6	G652D	24	24
60	Shankergarh	ILA	Manikpur	ILA	60.6	G652D	24.7	24.7
61	Manikpur	ILA	Satna	ILA	83	G652D	22	22
62	Satna	ILA	Maihar	ILA	39	G652D	13	13
63	Maihar	ILA	Katni	OADM	67	G652D	19	19
64	NDLS	OADM	Ghaziabad	OADM	30	G652D	30	30
65	Tundla	OADM	AGRA	OADM	40	G652D	31	31

3. Fiber Losses & Distance of Kolkatta to Kharagpur-Asansol

S,N	Route	Km	Forward Fiber Loss (in dBm)	Reverse Fiber Loss (in dBm)
1	Kharagpur - Chandrakona	54.1	18.45	18.45
2	Chandrakona - Bishnupur	39.84	13.43	13.43
3	Bishnupur - Adra	89	26.3	28.4
4	Adra - Asansol	55.5	14.9	21.1
5	Asansol -Durgapur	49.5	28	25.2
6	Durgapur - Khana	54.5	19.1	22.2
7	Khana - Jaugram	47.5	16.4	19.6
8	Jaugram - Kamarkundu	33.5	19	19
9	Kamarkundu - Kolkatta	43.3	20	20
10	Kharagpur - Panskura	48	24.1	20.2
11	Panskura - Bagnan	38	23.7	23.8
12	Bagnan - Kolkatta	56.5	25	25

4. Existing working channel matrix is as below.

Sr. No.	Segment Details	Optical Line System	Max No. of 10G Channels used	Remarks
1	Delhi to Ghaziabad	80 Ch.	33	With DCM
2	Ghaziabad to Lucknow	80 Ch.	31	With DCM
3	Lucknow to Mugalsarai	80 Ch.	32	With DCM
4	Mugalsarai to Kolkatta	80 Ch.	44	With DCM
2	Kolkatta to Asansol	40 Ch.	1 CH. of 300G	

5. Network Details which shall be considered for design.

1. Photonics details for both Ciena and Coriant shall be considered for design

a. WSS: 8x1 WSS

- i. C-band, 1529.94 to 1561.42 nm.
- ii. Demux Insert loss (Max): 7.8 dB
- iii. Mux Insert loss (Max): 12.4 dB

b. Mux/Demux

- i. 50GHz 40 Channel module
- ii. C-band 19590-19200
- iii. Add Insert loss (max): 6.0 dB
- iv. Drop Insert loss (max): 6.6 dB

2. Architecture of ROADM: Directional ROADM

3. OSNR of existing TXPs: Not Applicable for design validation

4. DGE sites: Not specifically used

5. Amplifier Noise Figure

- i. Line A: 5.5dB
- ii. Line B: ~ 5-10 dB

6. Following are characters of existing Amplifier and which shall be considered for design.

- i. Booster Amplifier: Gain: (DFG) 23dB Output Power: 23 dBm
- j. Pre-Amplifier iii. Gain: (DFG) 23dB Output Power: 23 dBm.

7. DCM Details which shall be considered for design.

S.N	DCF/DCM Module name	DCM/DCF (KM)	Max. Insertion loss (dB)
1	D0850DCF-2	50	3.9
2	D0510DCF-2	30	2.8
3	D0340DCF-2	20	2.3
4	D0680DCF-2	40	3.4
5	D1020DCF-2	60	4.6
6	D0170DCF-2	10	1.8
7	D01190DCF-2	70	4.9
8	D01360DCF-2	80	5.5
9	D01530DCF-2	90	6
10	D01700DCF-2	100	6.5
11	D01870DCF-2	110	7
12	D02040DCF-2	120	7.5

8. Section wise details of DCM

- a. Delhi to Mugalsarai via Kanpur.

S.No	Node -A DCM	Node-A	Node-Z
1	NIL	Delhi-1D-02 (ROADM)	NICShastriPark-1D-01
	NIL	NICShastriPark-1D-01 (ROADM)	Delhi-1D-02
2	NIL	Delhi-1(DMRC)D-03 (ROADM)	NICShastriPark-1(DMRC)D-02
	NIL	NICShastriPark-1(DMRC)D-02 (ROADM)	Delhi-1(DMRC)D-03
3	D0340DCF-2	NICShastriPark-1 (ROADM)	Ghaziabaad-1
	NIL	Ghaziabaad-1 (ROADM)	NICShastriPark-1
4	D0680DCF-2+D0510DCF-2	Ghaziabaad-1	Khurja-1
	D0680DCF-2	Khurja-1 (ILA)	Ghaziabaad-1
5	D1020DCF-2	Khurja-1	Aligargh-1
	D0510DCF-2	Aligargh-1 (ILA)	Khurja-1
6	D0510DCF-2	Aligargh-1	Pora-1
	D0680DCF-2	Pora-1 (ILA)	Aligargh-1
7	D0680DCF-2	Pora-1	Tundla2-1
	D0680DCF-2	Tundla2-1 (ROADM)	Pora-1
8	D0680DCF-2	Tundla2-1	Sikohabaad-1
	D0850DCF-2	Sikohabaad-1 (ILA)	Tundla2-1
9	D0510DCF-2	Sikohabaad-1	Etawa-1
	D1190DCF-2	Etawa-1 (ILA)	Sikohabaad-1
10	D0850DCF-2	Etawa-1	Phaphund-1
	D0850DCF-2	Phaphund-1 (ILA)	Etawa-1
11	D0510DCF-2	Phaphund-1	Rura-1
	D0680DCF-2	Rura-1 (ILA)	Phaphund-1

12	D1360DCF-2	Rura-1	Kanpur-1
	D0170DCF-2	Kanpur-1 (ROADM)	Rura-1
13	D1020DCF-2	Kanpur-1	Anug-1
	D0340DCF-2	Anug-1 (ILA)	Kanpur-1
14	NIL	Anug-1	Fatehpur-1
	D1190DCF-2	Fatehpur-1 (ILA)	Anug-1
15	D1190DCF-2	Fatehpur-1	Katoghan-1
	D0170DCF-2	Katoghan-1 (ILA)	Fatehpur-1
16	NIL	Katoghan-1	Bharwari-1
	D1020DCF-2	Bharwari-1 (ILA)	Katoghan-1
17	D1190DCF-2	Bharwari-1	Allahabad-1
	D0510DCF-2	Allahabad-1 (ROADM)	Bharwari-1
18	D0340DCF-2	Allahabad-1	Mejaroad
	D0680DCF-2	Mejaroad (ILA)	Allahabad-1
19	D1020DCF-2	Mejaroad	Vindhiyachal
	D1020DCF-2	Vindhiyachal (ILA)	Mejaroad
20	D0170DCF-2	Vindhiyachal	Chunar-1
	D0340DCF-2	Chunar-1 (ILA)	Vindhiyachal
21	D0170DCF-2	Chunar-1	Mugalsarai-1
	D1530DCF-2	Mugalsarai-1 (ROADM)	Chunar-1

b. Delhi to Mugalsarai via Lucknow

S.No	Node A -DCM Module	Node-A	Node-Z
1	D0510DCF-2	Delhi-1 (ROADM)	Ghaziabaad-1
	D0170DCF-2	Ghaziabaad-1 (ROADM)	Delhi-1
2	D0510DCF-2	Ghaziabaad-1 (ROADM)	Hapur-1
	D1190DCF-2	Hapur-1 (ILA)	Ghaziabaad-1
3	D0850DCF-2	Hapur-1 (ILA)	Gajrola-1
	D0850DCF-2	Gajrola-1 (ILA)	Hapur-1
4	D0850DCF-2	Gajrola-1 (ILA)	Moradabaad-1
	D0340DCF-2	Moradabaad-1 (ROADM)	Gajrola-1
5	D0850DCF-2	Moradabaad-1 (ROADM)	Rampur-1
	D0340DCF-2	Rampur-1 (ILA)	Moradabaad-1
6	D1190DCF-2	Rampur-1 (ILA)	Bareilly-1
	D1190DCF-2	Bareilly-1 (ILA)	Rampur-1
7	D1020DCF-2	Bareilly-1 (ILA)	Shajahanpur-1
	D1020DCF-2	Shajahanpur-1 (ILA)	Bareilly-1
8	D0510DCF-2	Shajahanpur-1 (ILA)	Hardoi-1
	D0850DCF-2	Hardoi-1 (ILA)	Shajahanpur-1
9	D0510DCF-2	Hardoi-1 (ILA)	Balamau-1
	D0510DCF-2	Balamau-1 (ILA)	Hardoi-1
10	D1020DCF-2	Balamau-1 (ILA)	Lucknow-1
	D0680DCF-2+ D0850DCF-2	Lucknow-1 (ROADM)	Balamau-1
11	2*D0340DCF-2	Lucknow-1 (ROADM)	Haidergargh-1
	D0850DCF-2	Haidergargh-1 (ILA)	Lucknow-1
12	D0850DCF-2	Haidergargh-1 (ILA)	Nihalgargh-1
	D0850DCF-2	Nihalgargh-1 (ILA)	Haidergargh-1
13	D0850DCF-2	Nihalgargh-1 (ILA)	Sultanpur-1

	D0680DCF-2	Sultanpur-1 (ILA)	Nihalgargh-1
14	D0850DCF-2	Sultanpur-1 (ILA)	Srikrishnanagar-1
	D0850DCF-2	Srikrishnanagar-1 (ILA)	Sultanpur-1
15	D0510DCF-2	Srikrishnanagar-1 (ILA)	Jaunpur-1
	D0680DCF-2	Jaunpur-1 (ILA)	Srikrishnanagar-1
16	D0850DCF-2	Jaunpur-1 (ILA)	Varanasi-1
	D0340DCF-2+D1020DCF-2	Varanasi-1 (ILA)	Jaunpur-1
17	D0680DCF-2	Varanasi-1 (ILA)	Mugalsarai-1
	D0170DCF-2	Mugalsarai-1 (ROADM)	Varanasi-1

c. Kanpur to Lucknow

S.No	Node-A	Node-Z	DCF/DCM Module
1	Kanpur-1	Ajgain-1	D0850DCF-2 (Ajgain)
2	Ajgain-1	Kanpur-1	D0510DCF-2(kanpur)
3	Ajgain-1	Lucknow-1	D0340DCF-2(Lucknow)
4	Lucknow-1	Ajgain-1	D0850DCF-2 (Ajgain)

d. Mugalsarai to Asansol via Patna

Section		Start Node A -DCM	End Node B- DCM
Start Node A	End Node B		
Patna-1 (ROADM)	Ara-1(ILA)	D0510DCF-2 + D0510DCF-2	D0850DCF-2
Ara-1 (ILA)	Buxar-1(ILA)	D1190DCF-2	D1190DCF-2
Buxar-1 (ILA)	Zamania-1(ILA)	D0850DCF-2	D0680DCF-2
Zamania-1 (ILA)	Mughalsarai-1(ROADM)	D1190DCF-2	D0510DCF-2
Asansol-1 (ROADM)	Madhupur-1(ILA)	D0510DCF-2 + D0850DCF-2	D1190DCF-2
Madhupur-1 (ILA)	Jasidih-1(ILA)	D0510DCF-2	D0340DCF-2
Jasidih-1(ILA)	Jhajha-1(ILA)	D0850DCF-2	D0850DCF-2
Jhajha-1 (ILA)	Kuil-1(ILA)	D0850DCF-2	D0850DCF-2
Kuil-1 (ILA)	Mokama-1(ILA)	D0510DCF-2	D0850DCF-2
Mokama-1 (ILA)	Bakthiyarpur-1(ILA)	D0850DCF-2	D0850DCF-2
Bakthiyarpur-1 (ILA)	Patna-1(ROADM)	D0680DCF-2	D0510DCF-2 + D0340DCF-2

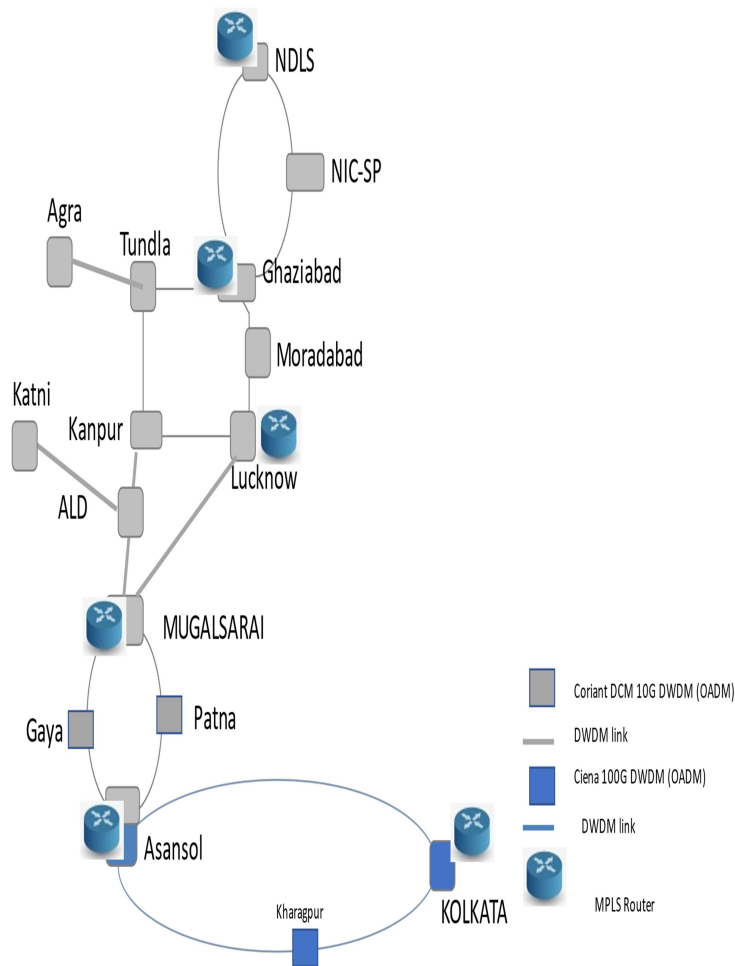
e. Mugalsarai to Asansol via Gaya

Section		Start Node A -DCM	End Node B- DCM
Start Node A	End Node B		
Mughalsarai-1 (ROADM)	BabuaRoad-1	D0850DCF-2	D1360DCF-2
BabuaRoad-1 (ILA)	Sasaram-1	D0850DCF-2	D1020DCF-2
Sasaram-1 (ILA)	Rafiganj-1	D0850DCF-2	D1020DCF-2
Rafiganj-1 (ILA)	Gaya-1(ROADM)	D1020DCF-2	D0340DCF-2
Gaya-1 (ROADM)	Paharpur-1	D0680DCF-2	D1020DCF-2
Paharpur-1 (ILA)	Koderma-1	D0680DCF-2	D0850DCF-2
Koderma-1 (ILA)	Parasnath-1	D0850DCF-2	D0850DCF-2
Parasnath-1 (ILA)	Dhanbad-1(ROADM)	D0680DCF-2	D1360DCF-2 + D1020DCF-2

Dhanbad-1 (ROADM)	Asansol-1(ROADM)	Nil	D0510DCF-2+D0680DCF-2
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9. Topology

DELHI-KOLKATA



Response to Queries against Bid Number: GEM/2021/B/1571122 Dated: 04-10-2021

Sr. No.	Document Name	Page no. of reference document	RFP Annexure Sr. no.	Tender Clause	Bidder Query	RailTel Response
1	Annexure-I	Page 10: SOR	SOR	Router Line Card of 2x100G Interface with 2x100G DWDM optical pluggable module/device and dual line port protection module/device (for traffic protection in east and west direction) as per technical specification given in Annexure-I. Qty asked: 6 numbers.	Do we need to offer 1. 100G DWDM interfaces with pluggable modules - 12 numbers 2. Traffic Protection device in East and west direction - 12 numbers Kindly clarify	Tender Conditions is self explanatory. Bidder to propose 2x100G interface with DWDM device/pluggable modules and Dual port Traffic Protection device for East and West Line Direction Protection.
2	Annexure-I	Page 10: SOR	SOR		Whether DWDM interfaces can be provided in existing card by adding Daughter/child module with pluggable optics Kindly clarify	Tender Condition is self explanatory. Bidder to propose separate Line card along with Daughter/child/pluggable optics.
3	RFP specs: Information to Bidder Document	Page 10:	17	The Router Line Card shall support traffic interface mirroring in both ingress & egress directions for both IPv4 & IPv6. It should also be able to mirror local and multicast traffic.	In case of Traffic mirroring are involved in "ingress" directions only. Kindly delete "egress" for larger participations. Kindly modify "The router shall support traffic interface mirroring in both ingress & egress directions for both IPv4 & IPv6. It should also be able to mirror local and multicast traffic."	Please refer to Corrigendum-II.

4	RFP specs: Information to Bidder Document	Page 15	24	RFC 3973 PIM DM	Please delete PIM-DM, and generally use PIM-SSM and PIM-SM. kindly Add PIM-SSM and PIM-SM in place of PIM-DM	Please refer to Corrigendum-II.
5	RFP specs: Information to Bidder Document	Page 15	24	Shall support BFD: single hop and multihop and micro BFD	We would request to allow BFD over Bundle (BoB). Kindly modify as "Micro BFD or BFD over Bundle (BoB)" BOB mode is a standard based fast failure detection of link aggregation (LAG) member links	Please refer to Corrigendum-II.
6	RFP specs: Information to Bidder Document	Page 16	29	a) The Router Line Card should be supplied (per line card) with 2 Nos of DWDM 100/200G optical pluggable module or OTN device (Minimum 400G capacity) with min. 2 Nos of DWDM line ports and 2xQSFP28 client ports .OTN device shall equipped with pluggable/fixed module in DWDM line ports . In case of OTN device, Bidder shall also supplied 2 Nos of QSFP28 DAC/AOC Cables-5 meter (per line card).	Kindly clarify whether the requirement is 2 nos. of 100G DWDM interfaces with pluggable optics and each 100G port should be upgradeable to 200G from 100G.	Tender Conditions is self explanatory. OTN Device Line Interface OR Router DWDM Interfaces including pluggable optics of each 100G port should be upgradeable to 200G from 100G without any additional hardware & License.

7	RFP specs: Information to Bidder Document	Page 16	29	b) DWDM Optical pluggable module/OTN device shall support OSNR (back to back) less than 13 db for 100G line rate and less than 20 db for 200G line rate. Shall also Support 100G with QPSK modulation and 200G with 8 QAM or better modulation. DWDM Optical pluggable module/OTN device shall support wavelength as per ITU-T DWDM grid @ 1550nm Band (100MHz-grid frequency or 50GHz-grid-frequency). Proposed DWDM Optical pluggable module/OTN device shall have capabilities to work over 10G DWDM (with DCM Network).	In principle, 100G QPSK with existing Nx 10G channel with DCM. However, for final outcome on number of channel with 10G and 100G, a detailed simulation may be required. Kindly share field network topology and exact fiber losses. Src Site, Dst site, OLA location, Span length, Span loss, Amplifier Gain, Amplifier O/p Power	Topology and details of existing DWDM Network like distance, fiber losses, traffic matrix etc are enclosed as Annexure-I of Corrigendum-II for Network design. Bidder can propose Regeneration (3R) at OADM Locations, if required.
8	RFP specs: Information	Page 16	29	c) DWDM Optical module / OTN device shall provide following performance monitoring health of circuit i. Transmit Power ii. Receive Power	Kindly modify as below: iii. Wavelength generally configurable parameters (not PM), Please delete	Please refer to Corrigendum-II.

	n to Bidder Document			iii. Wavelength (nm) or Frequency (THz) iv. Error Second v Severe error second vi. Code violation or background block error vii. Unavailable second	iv. Code vialation or Pre-FEC BER (Block error ratio)	
9	RFP specs: Information to Bidder Document	Page 16	29	d) The Router Line card shall be supplied with protection module / device (dual port). Protection module / device shall fault detection and switching from active to standby module should be less than 50 to 100 ms. There shall no interruption be absolutely to traffic. Protection switching shall be triggered based on Loss of Signal and Degrade Signal failure	PSM is single module with 3 Port. So, instead of working and protection module, this should working and protection port On Protection Switch Module (PSM), following may be added: PSM should be equipp in chassis and the same should be managed. In TX section: a) Splits input optical channels to both working and protection lines. b) Forces the switch in the remote site by opening one of the two line paths (by putting the related VOA in AVS). In RX section: a) Selects the signals from working or protection line. Each line is monitored through a PD. b) Balances the two line losses by changing the VOA attenuation value at the same time of the switch change of state.	Tender Conditions is very clear. No changes in tender condition.
10	RFP specs: Information to Bidder Document	Page 16	29	g) OTN device & Protection module / device system chassis should not be more than 5 RU	Kindly clarify that this is not appliacble for the cards in Exising chassis	This is applicable only for New Chassis only.

11	RFP specs: Information to Bidder Document	Page 16		Additional on RFC related	Kindly clarify that RFC 's asked in the RFP means that the Functionality of RFC should be complied	The OEM is required to provide compliance to the functionality mentioned in the RFC but will have ensure that issues due to interoperatability of such features with third party equipment do not arise in their equipment.
12	RFP specs: Information to Bidder Document	Page 16		Extension Request	We would request the extension due to multiple documentation is asked in the RFP and which requires multiple approval within our organization. Kindly extend the date of submission to another 15 days from the date of clarification/corrigendum.	As per Tender
13			16,29b	DWDM Optical pluggable module/OTN device shall support OSNR (back to back) less than 13 db for 100G line rate and less than 20 db for 200G line rate. Shall also Support 100G with QPSK modulation and 200G with 8 QAM or better modulation	Please provide the link distance and losses to simulate the link in planning tool.	Topology and details of existing DWDM Network like distance, fiber losses, traffic matrix etc. are enclosed as Annexure-I for Network design . Bidder can propose Regeneration (3R) at OADM Locations, if required.
14			16,29	General Requirement	Please provide the required traffic matrix	
15			17,29e	OTN Device & Protection module/device system shall be manage from Web-client or Agent Client or NMS. License & software for	We understand that NMS is not mandatory for OTN equipment, Only local craft terminal is enough	Tender Conditions is very clear.NMS is not mandatory for OTN Device & Protection module/device. In case NMS is not proposed then the OTN device & protection module/device

				NMS/Web/Agent should be provide along with devices.		system should be managed from Web-client or Agent Client.
16				General clarification	Please clarify the power supply arrangement on the various sites. Whether it is -48V supply at the rack or bidder has to install it's own PDU unit?	Power supply and Rack will be provided by RailTel including PDU ,MCB,Cable and etc.
17				General clarification	Please clarify whether MCBs are available inside the rack or not? Is it being provided by Railtel.	
18				General clarification	We understand that Rack is not required along with equipment.	
19			17,29e	OTN Device & Protection module/device system shall support SNMP for Alarm monitoring and should support RESTAPI/	Does the bidder need to include Netconf Yang licences with the offer or just support is needed now?	Tender Conditions is self explanatory. OTN Device & Protection module/device system should support RESTAPI/ Netconf/Yang for Network Integration with thrid party NMS/OSS integration in case required in future by upgradation of software/licenses .
				Netconf/Yang for Network Integration with thrid party NMS/OSS integration in case required in future by upgradation of software/licenses .		
20			17,31	It may kindly be noted that in the specification wherever support for a feature has been asked for, it will mean that the feature should be available without RailTel requiring any other hardware/software/licenses.	Does the bidder need to include Netconf Yang licences with the offer even if it is not required in network now but may be required in future?	

				Thus all hardware/software/licenses required for enabling the support/feature shall be included in the offer. Any license fee required to be paid for hardware & software during the life cycle of the equipment shall be included in the rate quoted by the tenderer. There shall be no post contractual liability of license fee on RailTel for hardware & software supplied by tenderer.		
21				Delivery Period given is 60days	Query:- As per the tender clause on page no. 1 of ITB, point no 7.1, the delivery period is mentioned as 60 days from issuance of confirmed PO. As you aware due to the current pandemic situation of Covid-19 there has been delay on deliveries substantially & also there is a very sharp increase in the global demand for the semiconductors, many large OEM's in the industry including Juniper Networks and Other reputed DWDM CARD OEM (our offered equipment's OEM) is experiencing shortage of components to meet the production demands, due to which the delivery lead	Please refer to Corrigendum-II.

					time has increased. However, post order loading on OEM, we have options to expedite deliveries, but we request you to kindly provide delivery time upto 150-160 days from date of Purchase Order	
22	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Please clarify whether fiber losses includes Fiber Repair Margin? If not, how much fiber repair margin needs to be considered for design?	Fiber Repair Margin is not included in Fiber Losses , Bidder should take minimum 0.5 db OSNR margin per Link.
23	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Is understanding correct that Fiber losses shared in RFP includes connector loss?	Connector loss is included in Fiber Losses
24	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over	Madhupur to Asansol span: Is fiber type G.653? Pl confirm	Fiber type is G652D

				existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.		
25	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Gaya to Rafiganj span: Is fiber type G.653? Pl confirm	Fiber type is G652D
26	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Dhanbad to Asansol span: Is fiber type G.653? Pl confirm	Fiber type is G652D
27	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	What is the fiber type between Kolkatta and Asansol?	Fiber type is G652D
28	RFP specs:	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata	Please share DCU Info for following segment as information is not available in Annexure#1	Information is availbale in Annexure-I of Corrigendum-II

29	Information to Bidder Document			by using mix of Alien wavelength over existing coriant make DWDM	Lucknow-Ajgain-Kanpur	Information is availbale in Annexure-I of Corrigendum-II
30				segment (Nx10G Network with DCM) & Ciena DWDM system.	Lucknow - Raibarali - Guriganj - Pratapgarh - Janghai - BHADOHI - Varanasi-Mugalsarai	Information is availbale in Annexure-I of Corrigendum-II
31	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Please clarify about OLA configuration deployed for Coriant 10G DWDM Network, which option is deployed or mix of both in network and incase of mix then request to share information site wise	OLA configuration deployed for Coriant 10G DWDM Network are ILA :East Direction (PreAmplifier) & West Direction (PreAmplifier) and OADM :- In each Direction (PreAmplifier & Booster).
31a					Option-I: East Direction (PreAmplifier) & West Direction (Booster) or vice versa	
31b					Option-II: East Direction (PreAmplifier & Booster) & West Direction (PreAmplifier & Booster) or vice versa	
32	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Please clarify about OLA configuration deployed for Ciena 300G DWDM Network, which option is deployed or mix of both in network and incase of mix then request to share information site wise	OLA configuration deployed for Coriant 10G DWDM Network are ILA :East Direction (PreAmplifier) & West Direction (PreAmplifier) and OADM :- In each Direction (PreAmplifier & Booster).
32a					Option-I: East Direction (PreAmplifier) & West Direction (Booster) or vice versa	
32b					Option-II: East Direction (PreAmplifier & Booster) & West Direction (PreAmplifier & Booster) or vice versa	
33	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata	Request to share following Amplifier information sitewise for Coriant & Ciena	Annexure-I of Corrigendum-II, already mentioned detailed information

33a				by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Current Gain	about existing network's Photonics (DWDM) components characteristic like Gain, Noise Figure, Insertion loss, 40/80 Channel system etc along with number of channels running on each segment. So considering these parameters & based on required fiber loss & margin OEM can propose the solution. Based on design OEM can suggest minor tuning in amplifier gain & tilt without impacting performance of existing channels.
33b					Current Output Power	Current Output Power for Ciena Segment is 4db per channel and Current Output Power for Coriant is 1db per channel.
34	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Request to share Coriant Amplifier Rx Power Sensitivity	Practical value of Coriant Amplifier Rx Power Sensitivity in between 32 to 34.
35	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena	Request to share Ciena Amplifier Rx Power Sensitivity	Practical value of Ciena Amplifier Rx Power Sensitivity in between 34 to 36.

				DWDM system.		
36	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Is understanding correct that ciena DWDM system deployed over both diverse path between Asansol & Kolkata?	Yes ,ciena DWDM system deployed over both diverse path between Asansol & Kolkata.
37	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Is there any express 10G channel between NDLS & Lucknow or Tundla or Kanpur via GZB?	Annexure-I of Corrigendum-II, already mentioned detailed information about existing network's Photonics (DWDM) components characteristic like Gain, Noise Figure, Insertion loss, 40/80 Channel system etc along with number of channels running on each segment. So considering these parameters & based on required fiber loss & margin OEM can propose the solution. Based on design OEM can suggest minor tuning in amplifier gain & tilt without impacting performance of existing channels.
38	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Request to share current Rx Power @ 10G Tranponder @ Delhi (both direction), GZB (both direction), Lucknow (both direction), Mugalsarai (both direction), Asansol (both direction)	
39	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G	Request to share current Rx Power @ 300G Tranponder @ Asansol (both direction), Kolkata (both direction)	

				Network with DCM) & Ciena DWDM system.		
40	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Please clarify technical specification shared in RFP is for which vendor hardware? And Typically, Demux loss is higher than Mux. Is it correct?	All Information are availbale in Annexure-I of Corrigendum-II
41				<i>Technical Specification</i>	As per RFP	
				<i>WSS</i>	8x1	
				<i>C-Band (nm)</i>	1529.94 -1561.42	
				<i>Demux IL (dB)</i>	7.8	
				<i>Mux IL (dB)</i>	12.4	
				<i>Mux/Demux</i>		
				<i>Channel Spacing(GHz)</i>	50	
				<i>C-Band (GHz)</i>	19590-19200	
				<i>Add IL (dB)</i>	6	
				<i>Drop IL (dB)</i>	6.6	
				<i>Amplifier NF</i>		
				<i>Line A (dB)</i>	5.5	
				<i>Line B (dB)</i>	5-10	
				<i>PreAmplifier</i>		
				<i>DFG (dB)</i>	23	
				<i>Output Power (dBm)</i>	23	
				<i>Booster Amplifier</i>		
				<i>DFG (dB)</i>	23	
				<i>Output Power (dBm)</i>	23	

42	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Please clarify whether DCM's are placed at Mid stage at all OLA sites?	Information is availbale in Annexure-I of Corrigendum-II
43	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Please clarify whether DCM's are placed at ROADM site?	Information is availbale in Annexure-I of Corrigendum-II
44	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Request to share OSNR of existing 10G & 300G channel	Annexure-I of Corrigendum-II, already mentioned detailed information about existing network's Photonics (DWDM) components characteristic like Gain, Noise Figure, Insertion loss, 40/80 Channel system etc along with number of channels running on each segment. So considering these parameters & based on required fiber loss & margin OEM can propose the solution. Based on design OEM can suggest minor tuning in amplifier gain & tilt without impacting performance of

						existing channels.
45	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Request to share wavelength plan of 10G channel 1. Delhi-GZB (both path) 2. GZB-Lucknow (both Path) 3. Lucknow-Mugalsarai (both Path) 4. Mugalsarai -Asansol (both Path) 5. Asansol - Kolkata (both Path)	Any of free frequency available in the Route.
46	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Is understanding correct that OADM NIC-SP, Tundla, Kanpur, Allahabad supports express channel?	Yes, OADM NIC-SP, Tundla, Kanpur, Allahabad supports express channel.
47	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Is there any 10G regenerator site in present between GZB and Lucknow (direct path) in present network?	Muradabad OADM Site is in between GZB and Lucknow.
48	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien	Is there any 10G regenerator site in present between GZB and Lucknow via Tundla in present network?	Tundla and Kanpur OADM Sites are in between GZB and Lucknow via Tundla Network.

				wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.		
49	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Is there any 10G regenerator site in present between Lucknow and Mugalsarai via ALD in present network?	Allahabad (ALD) OADM Site is in between Lucknow and Mugalsarai via ALD.
50	RFP specs: Information to Bidder Document	Page 13	3	RailTel desires to create 100G network between Delhi to Kolkata by using mix of Alien wavelength over existing coriant make DWDM segment (Nx10G Network with DCM) & Ciena DWDM system.	Is there any 10G regenerator site in present between Lucknow and Mugalsarai (direct path) in present network?	Varanasi (ALD) OADM Site is in between Lucknow and Mugalsarai Direct Path.