



**Corrigendum to Tender Enquiry No.: TPNODL/OT/2021-22/30
for "SITC of SCADA/ADMS System at TPNODL"**

A. The date schedule is revised as below:

- | | |
|--|--------------------------|
| ✓ Due Date & Time for Bid Submission: | 1700 Hours on 16.08.2021 |
| ✓ Due Date & Time for Technical Bid Opening: | 1730 Hours on 16.08.2021 |

The tender document stands modified to the extent stipulated herein above in this document.

	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
1	Volume 2, 1.3 Scope of work//page-46 of 368	Providing source code for customizations	Installation software and backups will be provided to TPNODL which can be used by their engineers to do a complete software installation/restoration by TPNODL. Further, the integration with external systems will be done on open interfaces like ODBC, OPC & API and will be part of the configuration. Hence request TPNODL to delete this clause.	As per RFP
2	2. SCADA/ADMS Architecture//page-49 of 368	NOTE:- SCADA/ADMS, ISR, COMMUNICATION, FEP, NMS, DMZ, WEB SERVERS SHALL BE DUAL REDUNDANT. SCADA/ADMS LAN SHALL BE DUAL STAR TOPOLOGY & DTS, DEVELOPMENT SYSTEM, BCC SHALL BE SINGLE SYSTEM.	While it is mentioned that DTS, DEVELOPMENT SYSTEM, BCC SHALL BE SINGLE SYSTEM, the architecture diagram and the BoQ in pages 253 and 257 is not reflecting the same. Please clarify.	BCC shall be replica of MCC in point of hardware, software and functionalities
3	2. SCADA/ADMS Architecture//page-49 of 368	System Architecture The operation philosophy will be as followed: <input type="checkbox"/> The BALASORE i.e MCC location and BCC (Location yet to be decided) with full function operation <input type="checkbox"/> The BADRAK, J. ROAD, KEONJHAR and BARIPADA will be de-centralized remote location for area power system control.	We understand that the MCC and BCC will have complete system with servers and workstations, while the 4 remote centers at BADRAK, J. ROAD, KEONJHAR and BARIPADA circles will be remote workstations connected to MCC/BCC. Please confirm.	Noted and Confirmed.
4	2.2.2 Database development tools//page-55 of 424	The bidder would submit the report of CIM certification testing with other vendor's product along with the bid. The database tool should have the facility to export and import model files as per IEC 61970 part 552-4.	IEC 61970 is the CIM standard for transmission network and not applicable for the ADMS. Further there are no conformance test cases and certifications with regards to the ADMS and also there is no clarity on testing with other vendor's product based on the project scope. Hence request TPNODL to delete this clause.	IEC 61970 relevant to Distribution Network as TPNODL has Sub-transmission Network also are applicable.
5	2.6.4 Interfaces (External)//page-67 of 368	SCADA/ADMS system and network must compliance all the controls of ISO27001:2013	ISO27001 is the standard for IT security management system and is applicable for the compliance within the organization for the assets/information owned by them. This does not cover the Industrial control system/OT systems and is not applicable for a project delivery. Hence request the same to be deleted.	Data center is an integral part of IT System. Hence bidder needs to assist TPNODL in making the assets/information compliant to ISO 27001.
6	2.7.1.2 SCADA/ADMS from GIS Interface//page-68 of 368	As part of this interface GIS adaptor would be required for GIS Land base data, network model using GIS engines/adaptors supporting Native Adapters, CIM/XML Model for Distribution / Power System, using Model Exchange & Data Exchange over IEC 61968 Enterprise SOA Based BUS.	Please provide the details of the GIS system - The GIS vendor and the GIS software version.	Procurement of GIS is in progress and shall be able to communicate once the order is placed.
7	page-70,71 of 368	Table 9-1: SCADA/ADMS Redundancy and Table 9-2: User Interface Equipment	These tables are not clear w.r.t the architecture diagram and the BoQ and also the non-redundant requirement mentioned as "Note" in Page 49 of 368 in the architecture diagram.	Please refer our comments on S. No. 2 of this document.
8	Appendix – D SCADA/ ADMS Bill of Material//page-253 of 368	The No. of servers mentioned are 10 each at MCC and BCC for the following types- SCADA/ADMS, FEP, ISR, NMS, Interface Server; 5 each at MCC and BCC for DTS and Development Server	With this BoQ the total servers required are 120 Nos. Please clarify the utilization and confirm the requirement of these many no. of servers. Also this is not corresponding to the architecture diagram in page 49 of 368.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
9	Appendix – D SCADA/ ADMS Bill of Material//page-253 of 368	The No. of workstations/consoles are 5 each at MCC and BCC for Development and DTS consoles and 10 each at MCC and BCC for workstations and additional 15 workstations (5 each) for Bhadrak, J. Road, Keonjhar and Baripada	With this BoQ the total workstations/consoles required are 55 Nos. Please clarify the utilization and confirm the requirement of these many workstations/consoles. Also this is not corresponding to the architecture diagram in page 49 of 368. Please confirm the quantities of Workstation/consoles, 80 inch TV, Printers per Remote Location	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
10	Appendix – D SCADA/ ADMS Bill of Material//page-253 of 368	Storage & Backup Devices - The external mass storage device and External DAT drive are mentioned as 5 each at MCC and BCC	With this BoQ the total online storage and external DAT drive are 10 Nos. each. Please clarify the utilization and confirm the requirement of these many servers. Also this is not corresponding to the architecture diagram in page 49 of 368.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
11	Appendix – D SCADA/ ADMS Bill of Material//page-253 of 368	Switches and Security system (DMZ)	Please clarify the quantities of the switches as they are not corresponding to the architecture diagram in page 49 of 368 and also the architecture diagram does not indicate LAN segmentation b/w SCADA and development system LAN. Also, if there is segmentation each LAN will require only 2 switches.	The architecture shown in the tender document is a conceptual one. Bidder needs to submit the actual system architecture to meet all the functionalities, operational philosophy and availability of SCADA/ADMS System as per Tender without any impact on performance and reliability, as the customer has min. no. of quantity in a BoQ.
12	Appendix – D SCADA/ ADMS Bill of Material//page-253 of 368	Printers	B/W and Color Printers are mentioned as 1 set each at both MCC and BCC and total is mentioned as 5. Please confirm specific quantities of printers at MCC and BCC to be considered.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
13	Appendix – D SCADA/ ADMS Bill of Material//page-253 of 368	Software for Control Centre	All software is mentioned in Lot as 5 each in MCC and BCC for each of the software - SCADA software, ISR software, DMS software, OMS software, DTS software, Development software, NMS, WEB /Network security software and GIS Adaptor/Engine. The requirement of 5 each in MCC and BCC is not clear. Please clarify and confirm the quantities.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
14	5.2.2.3 Network Management System (NMS) servers	-	Since detailed Technical Specifications are not incorporated in this RFP, we request TPNODL to provide the technical specifications of the Network Management System to better understand the NMS scope.	Please refer NMS Spec. as specified in Corrigendum-1
15	5.2.2.3 Network Management System (NMS) servers	-	NMS license is derived based on the qty of the monitoring nodes which are not mentioned in the RFP.	Please refer NMS Spec. as specified in Corrigendum-1
16	General		We request you to mention the number of nodes to be monitored.	Please elaborate the query.
17	General		Kindly confirm if storage shall be provided in TPNODL premises and whether it will be separate for MCC and BCC	All Servers in respective control center shall be in a common room.
18	General		Kindly confirm the distance between server room and Operator desks, to calculate LAN cabling. We assume all servers will be in a common room. Please confirm.	MCC shall be in 1st Floor and BCC shall be in 1st or 2nd Floor. Lift shall not be available.
19	5.11 Table A 1. Server 12. Additional port	Server should support 2 Number of 10G Fiber Ethernet Ports with SFP.	Location of MCC and BCC in which floor and availability of lift if situated above ground floor	Do we need to provide the ports in current scope, or will it be procured later?
20	5.11 Table A 2. Workstation 9.	Dual AC Power Supply (in Watts)	Bidder can deliver 10G Fiber Port with SFP as per the applicability of system design in current scope.	There is no OEM providing Dual Power Supply in Tower mounted workstations. Can we propose Single Power Supply ?
21	Appendix-D Bill of Material		Bidder shall consider Workstations with Single Power Supply.	As per Architecture DTS and Development System is only in MCC and not in BCC. Whereas as per BOM it is required in both MCC & BCC kindly clarify the requirement.
22	Annexure VI - General Scope of Work Requirements from Bidder		Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1	As per the annexure various Annexures have been referred to but not attached hence we request you to confirm that this Annexure VI is not applicable
23	General		Annexure-VI is related to Acceptance Form for Participation In Reverse Auction Event. No deviation is allowed.	Since UPS/ Power Supply is in TPNODL scope we assume that Earthing will be in Scope of TPNODL. We will only extend the available Earth for our use. Please confirm.
24	General		Noted and Confirmed.	Please confirm that Furniture in Control Centre is in scope of TPNODL since the same is not mentioned in BOQ.
25	Page 46, Section 1.3/Scope of Work		Noted and Confirmed.	We understand that there is no existing SCADA system at TPNODL. Kindly confirm.
26	Page 49, Section 2/SCADA/ADMS Architecture		TPNODL is in process of setting up a small SCADA System to monitor and control up to 50 Grid Substations.	We understand that MCC will be in Balasore and BCC will be decided later. This MCC and BCC will consists of full fledged setup. The de-centralized locations at Badrak, J.Road, Keonjhar, Baripada Patna will have only remote workstation of MCC to monitor area wise locations. Please confirm the operation philosophy of MCC, BCC and de-centralized area control systems, as the RFP do not have detailed information.
27	Page 49, Section 2/SCADA/ADMS Architecture		BCC shall be replica of MCC in point of hardware, software and functionalities.	The bandwidth requirement between MCC & BCC shall be indicated in the technical offer. The same will be in TPNODL scope. Please confirm.
28	Page 100, Section 4.10/Video Images		All network and substation under TPNODL shall be monitored and controlled from MCC and BCC including administration, development, training, etc.. All network and substation under each circle shall be monitored and controlled from their respective decentralized control centers (Circle Offices).	Kindly provide information on existing details of the make and model of CCTV.
29	Page 166, Section 9.4/Scenario Builder		Requirement has been envisaged for future purpose. However, bidder needs to specify the bandwidth requirement between MCC & BCC to meet all the functionalities, operational philosophy and availability of SCADA/ADMS System as per Tender without any impact on performance and reliability.	Kindly clarify the requirement of a scenario builder. Is this similar to that of a training simulator?

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
30	General		We understand the project Schedule is for 1090 days. i.e, 36 months. Warranty period mentioned in RFP is for 60 months. As phase I will be completed in 1st year, warranty shall start for that phase after hand-over. The same is applicable for further phases. Kindly confirm.	Warranty period shall commence from the date of handing over of all deliverables in complete.
31	General		Major IT and Networking hardware OEMs provide warranty for maximum 5 years. TPNODL to consider the same and confirm.	No deviation is allowed.
32	Page 253, Appendix - D BOM		We understand from the proposed system architecture in page 45, the de-centralized area control system will have only a extended workstation. But in the BOM, the requirement for SCADA, FEP and other servers are 10 servers each at MCC and BCC. Kindly clarify the exact requirement of servers.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
33	Page 33, Section 1.3/ Procurement Intent		We understand that TPNODL proposed setup of MCC/BCC with DMS/OMS applications running at both locations. Please confirm.	Noted and Confirmed. Pleaes refer Corrigendum-1.
34	Page 33, Section 1.3/ Procurement Intent		In the Table 1-1 Service Territory, the no of 33/11kV Substation count is given as 278. However; in Page-45 under "SCAD/ADMS System Architecture", the no of substations are given as 315 covering 5 Circles. Kindly clarify the following a. Number of substations that is 278 or 315 b. IO count for each substations or overall count for entire system c. Break-up of status, analog and accumulators.	Please refer revised Appendix-C as specified in Corrigendum-1
35	General		Bidder requests TPNODL to confirm the existing GIS application in use? If Yes, we would like to know the Make/ Version/ CIM compliant/ data export capability along with level of network modelled in it and also availability of electrical parameters for the same?	Procurement of GIS is in progress and shall be able to communicate once the order is placed.
36	Page 16, Section 7.3/ Delivery Terms		Bidder requests TPNODL to clarify whether the DMS/OMS proposition will be considered optional in view of the term "tentative" being used in the Milestone table?	This shall be as per Corrigendum-1
37	Page 44, Section 4.6/ Pre-demo		Bidder requests TPNODL to confirm whether the pre-demo would involve the demonstration of ADMS functions on the purchaser's provided GIS data or in absence of GIS data, bidder will use the sample GIS data.	Yes, Bidder shall use the sample GIS Data
38	Page 46, Section 1.3/Scope of Work		Bidder requests TPNODL to like to provide if there exists any DMS/OMS system in use? If yes, please provide specifics related to data/ display migration requirements to the proposed ADMS solution.	No
39	Page 43, Section 4.6/ Score for Technical Evaluation/ Point-b		TPNODL to clarify the scoring for "Voltage VAR Control" function under Technical Evaluation; but same is not mentioned under ADMS applications in Page-42, Section 1.3/ Scope of Work? We consider "Voltage VAR Control" to be part of the proposed solution.	This shall be as per Corrigendum-1
40	Page 46, Section 1.3/Scope of Work		In support of above question; bidder would like to know, if the ADMS applications will be limited to as mentioned or we can propose Feeder Re-organization (FR) and VVC (Volt-Var Control) considering the building blocks for the same already being in the scope of purchaser's requirement?	This shall be as per Corrigendum-1
41	General		We understand that monitoring of the transmission network is not envisaged in the present scope. However, few functionalities that fall under Transmission system operations are included in the technical specification. TPNODL to confirm the requirement of EMS applications	TPNODL has sub-transmission network also. Hence all relevant application related to EMS shall be required, except Contingency Analysis.
42	Page 160, Section 8.1/Overview		Please refer our comments on point number 17.	Please refer our comments on Point No. 17 on this clarification document.
43	Page-195/ Section 10.4.6 Field Scheduling & Dispatching		From the given requirement we understand that purchaser is looking for a proposed solution to generate automated field crew competency based duty roster for the created work orders. Kindly confirm.	Confirmed
44	Page-233/ Section 14.1.1 Supplier Responsibilities		Kindly provide the details of availability of API's for integration with SAP-PM, MM, CIS, MDM & AVL? We understand that TPNODL will provide the front required for integration from respective OEMs. Kindly confirm.	SAP PI will be availed for the integration of ERP System along with Web Services.
45	Page-108/ 5.2.2.3 - Network Management System (NMS) servers		We understand from the RFP that NMS software instance is to be deployed at MCC @ Balasore and BCC @ TBD for monitoring of Network devices (ICMP/SNMP devices) centrally. At Page no 264 it is mentioned that NMS required 5 qty at MCC and 5 qty at BCC, total 10 qty required. Kindly clarify: Whether the NMS instances required at each of these 10 locations or at 2 centralized locations (i.e. MCC (Main/Active), BCC (Backup/Passive))	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
46	Volume I Page-33/ 1.2 - Procurement Intent		<p>We understand from the RFP that NMS software instance is to be deployed at MCC @ Balasore and BCC @ TBD for monitoring of Network devices (ICMP/SNMP devices) centrally.</p> <p>At Page no 264 it is mentioned that NMS required 5 qty at MCC and 5 qty at BCC, total 10 qty required.</p> <p>Kindly clarify:</p> <p>Whether the NMS instances required at each of these 10 locations or at 2 centralized locations (i.e. MCC (Main/Active), BCC (Backup/Passive))</p>	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
47	Page 46, Section 1.3/Scope of Work		We understand that all RTUs will report to either MCC or BCC at any given instance. TPNODL to clarify that MCC & BCC will be in hot-standby mode.	All RTU shall report to both MCC and BCC simultaneously. Both MCC and BCC shall operate in hot-hot mode.
48	GCC- Clause No 25.3 Order of Priority, Page no. 287 <u>Procedure to Participate in Tender-</u> 6.0 Order of Preference/Contradiction, Page No. 15		We understand that in absence of Special Conditions of Contract (SCC), the terms of clause 7.0 Post Award Contract Administration from Tender document, page 15 will be considered as SCC . Please confirm.	Ok noted.
49	GCC- 8.0 SECURITY CUM PERFORMANCE DEPOSIT, Page no. 273 <u>Procedure to Participate in Tender-</u> Clause No. 7.1 Special Conditions of Contract, Page No 15; Clause No. 7.5 Payment		TPNODL to clarify the following - 1. Applicable Bank Guarantees 2. Percentage of each Bank Guarantee 3. Validity of each Bank Guarantee 4. Format of Bank Guarantee	PBG- 3% of Contract value Validity if PBG shall be till warranty period plus three month. BG Format- Please refer-TPNODL GCC. BG for EMD- BG shall be valid for 210 days from date of bid submission (1st date)
50	Appendix-A Questionnaire- Licenses and warranties	Policy regarding providing source code	The source code of all software, interfaces and implementations is and remains the exclusive property of ECS and it is not recommended to provide the same with delivered system.	No deviation is allowed.
51	Liability & Limitations	<p>Except for any specific liability which may be identified in the Contract and which may be payable hereunder, Associate shall not be liable for any special, incidental, indirect, or consequential Damages or any loss of business Contracts, revenues or other financial loss (or equivalents thereof no matter how claimed, computed or characterized) arising out of or in connection with the Performance of the Work or supply of Goods unless caused by Associate's negligence, willful misconduct or breach of contract.</p> <p>If the Associate is a joint venture or consortium, all concerned parties shall be jointly and severally bound to the TPNODL for the fulfillment of the provisions of the Contract. The consortium or the joint venture shall designate one party as their leader, who will be the coordinator between the parties and TPNODL.</p> <p>The constituents & leader of the consortium or joint venture shall not be changed without the prior consent of TPNODL.</p> <p>TPNODL shall have no liability or any special, incidental, indirect or consequential Damages for any loss of Business Contracts, revenues or other financial loss arising out of this Contract.</p>	<p>We request you to kindly ammend the clause as follows,</p> <p>" Except for any specific liability which may be identified in the Contract and which may be payable hereunder, Associate shall not be liable for any special, incidental, indirect, or consequential Damages or any loss of business Contracts, revenues or other financial loss (or equivalents thereof no matter how claimed, computed or characterized) arising out of or in connection with the Performance of the Work or supply of Goods unless caused by Associate's negligence, willful misconduct or breach of contract.</p> <p>The consortium or the joint venture shall designate one party as their leader, who will be the coordinator between the parties and TPNODL.</p> <p>The constituents & leader of the consortium or joint venture shall not be changed without the prior consent of TPNODL.</p> <p>TPNODL shall have no liability or any special, incidental, indirect or consequential Damages for any loss of Business Contracts, revenues or other financial loss arising out of this Contract."</p>	It shall be firm as per tender. However for more clarity, the Limitation of Liability shall be 100% of Contract value

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
52	Limitation of Liability	The total liability of Associate against any contract shall be limited to the Total All Inclusive Contract Value.	We understand the deduction of maximum 10% against LD for delay in project, no further deduction envisage under this tender.	As already mentioned above.
53	LD Waiver Request	Any request of LD waiver shall be submitted within thirty (30) days of deducting LD. Request submitted beyond the timeline shall not be entertained. The TPNODL management will review on the LD Waiver Request on the facts and will decide about the LD Waiver which may be part or the % of the LD imposed, however the TPNODL's management decision will be full and final.	We Request you to kindly amend the clause as follows, "Any request of LD waiver shall be submitted within thirty (30) days of deducting LD. Request submitted beyond the timeline shall not be entertained. The TPNODL management will review on the LD Waiver Request on the facts and will accordingly waive the LD"	Not acceptable. This clause shall be firm as per tender.
54	TPNODL/OT/2021-22/30/2021-22/30/1.3/46	Study of existing deployed Micro SCADA and migration along with interfaces planned by TPNODL	Kindly provide details about existing Micro SCADA system and what all data need to be migrated to new SCADA/DMS system	TPNODL is in process of setting up a small SCADA System to monitor and control up to 50 Grid Substations.
55	General		Also to facilitate autosync between MCC & BCC, minimum 1 gbps communication bandwidth is recommended between MCC & BCC. Please confirm.	Same shall be discussed at the time of detailed engineering.
56	TPNODL/OT/2021-22/30/2021-22/30/2.2.3.4/57	The Contractor shall arrange the required software tool to acquire the initial data from the existing control centre at his own cost.	Please clarify in which format data from existing system will be provided.	CSV or XLS
57	TPNODL/OT/2021-22/30/2021-22/30/5/105 and 255	The bidders are encouraged to optimize the requirement of hardware for servers and processors where one or more applications can be combined or distributed in any combination with adequate redundancy without impacting the performance as described in section 3. However certain applications are to be hosted on independent hardware. Note:- The above BoM are minimum requirement envisaged by Customer. Bidder can provide better configuration to meet the specification without virtualization of hardware resources.	Mentioned two clauses are contradictory to each other. However, we request you to confirm that the Bidders can optimize the BoQ as per their solution offering.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
58	TPNODL/OT/2021-22/30/2021-22/30/9/164	The Simulator shall include the functionality listed in Table 9-1 Documentation, Quality Assurance and Testing , Project Implementation	Please clarify what is expected from simulator in terms of Documentation, Quality Assurance and Testing , Project Implementation	Documentation, Quality Assurance and Testing , Project Implementation are related to project deliverables and shall not be required in Training Simulator.
59	General	Sizing	Kindly provide sizing in terms of no of RTUs, FRTUs, digital points. Analog points etc to be integrated with new SCADA/ADMS system.	Please refer revised Appendix-C as specified in Corrigendum-1
60	TPNODL/OT/2021-22/30/2021-22/30/2.7.1.2 /68	As part of this interface GIS adaptor would be required for GIS Land base data, network model using GIS engines/adaptors supporting Native Adapters , CIM/XML Model for Distribution / Power System, using Model Exchange & Data Exchange over IEC 61968 Enterprise SOA Based BUS.	Please provide details about GIS system wrt 1. Make & Model 2. All data format in which electrical and attribute data will be available from GIS system 3. Format in which landbase data will be available from system	Procurement of GIS is in progress and shall be able to communicate once the order is placed.
61	TPNODL/OT/2021-22/30/2021-22/30/69	There will be an interface between the SCADA/ADMS and the work management system (WMS) to create work orders/switching orders for planning different types of planned shutdowns.	Please confirm if integration between SCADA/ADMS system and WMS system can be done over SOA based web services?	Yes
62	TPNODL/OT/2021-22/30/2021-22/30/69	SCADA/ADMS should be equipped with in-built interface developed with 3rd party Data Historian (such as PI, E-DNA, Hadoop, SAP-HANA etc.) which will send data on real time basis to Historian.	Please provide make & model of historian system with which SCADA/ADMS system is expected to be integrated.	ISR Historian shall be single point of node to interface with external data analysis system. Bidder need to consider accordingly.
63	TPNODL/OT/2021-22/30/2021-22/30/25	Archival Storage for DMS & OMS	DMS & OMS are integral applications of SCADA ADMS system hence no separate Storage is required. Please confirm if storage for SCADA and DMS/OMS can be combined.	Noted and confirmed

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
64	TPNODL/OT/2021-22/30/2021-22/30/25	LVS	There is ambiguity in the specification. Please clarify if DLP based or Laser based LVS is to be proposed.	Consider Laser based VPS
65	TPNODL/OT/2021-22/30/2021-22/30/5.5/109	The time and frequency facility shall include digital displays for: 1) UTC time and date in the format DD:HH:MM:SS (the hour display shall be in 00 to 23 hour format) 2) Time deviation in the format \pm xx.xx seconds 3) Power system frequency in the format xx.xxx Hz 4) Frequency deviation in the format \pm x.xxx Hz.	Frequency Deviation, Time Deviation as well as Power system frequency is mentioned where as in case of 5.11 page number 117 (Digital Display Clock). It is not mentioned in BOQ. Kindly amend the same. Kindly provide architecture for GPS connectivity with Digital Display Clock.	Bidder has to meet the requirement with either separate display unit or multiple displays in a single unit.
66	TPNODL/OT/2021-22/30/2021-22/30/5.6.1.1/110	5.6.1.1 Monitors	There are two different Monitor specs provided kindly confirm which to refer. Minimum refresh rate 75Hz is applicable for Gaming Monitors and standard refresh rate for SCADA environment is 60Hz. Kindly confirm & change the same.	Bidder may consider 60Hz as min. refresh rate for Monitors
67	TPNODL/OT/2021-22/30/2021-22/30/5.11/117	1. Servers Additional port : Server should support 2 Number of 10G Fiber Ethernet Ports with SFP	Back-up mechanism will be required in some of the selected servers only. Request TPNODL to remove the Mandatory FC port for all servers. Bidder can propose the port only for servers which are to be connected to SAN storage.	Bidder can deliver 10G Fiber Port with SFP as per the applicability of system design in current scope.
68	TPNODL/OT/2021-22/30/2021-22/30/5.11/115	1. Servers	Since the Bidders are encouraged to optimize the overall solution, we can also optimize the Server Configuration provided in the tender. Kindly confirm.	Bidder can provide the optimized overall solution by meeting the min. technical requirements as specified in the RFP and revised BoQ.
69	TPNODL/OT/2021-22/30/2021-22/30/8 and 9/121	9. SAN Switch	As SAN Storage will fetch all the data from IS&R server, SAN Switch is not required. Please confirm if bidder can optimize the Architecture.	No deviation is allowed.
70	TPNODL/OT/2021-22/30/2021-22/30/10/122	Interface ports: Suitable port for interfacing with servers/workstations.	Tape Library is suitable to interface with Server and not to workstation. It is requested to remove the requirement from workstation.	Noted and Confirmed.
71	TPNODL/OT/2021-22/30/2021-22/30/10/122	Tape Library	Kindly provide minimum native capacity required on Tape Library.	Bidder has to envisage and propose based on the back up size of the offered solution.
72	TPNODL/OT/2021-22/30/10/122	Tape Library	Request for deletion of LTO-3-060, LTO-3, LTO-4-120, LTO-5-140 which is EOL. Kindly confirm bidders can provide LTO 6.	Bidder has to provide equivalent or higher version without any price implication to the TPNODL.
73	TPNODL/OT/2021-22/30/2/116	Graphic adapter cards(HDMI/DVI/Display Port)	It is recommended for all workstations to have minimum 4GB Nvidia Graphic card for better performance.	Bidder has to meet the minimum technical requirement as mentioned in the RFP.
74	TPNODL/OT/2021-22/30/5.6.1.1/116	Diagonal Viewable size 24"	Typically 24inch monitor available from standard OEM come with diagonal viewable size is 23.5inch, kindly confirm the same is acceptable.	Bidder has to provide equivalent or higher version without any price implication to the TPNODL.
75	TPNODL/OT/2021-22/30/5.6.1.1/116	Anti-glare & anti-static	The required feature is applicable to CRT monitors and not to TFT Monitor, Kindly remove the same.	Bidder has to consider TFT Monitor.
76	TPNODL/OT/2021-22/30/2/116	Dual AC Power Supply in Watts)	Kindly confirm dual power supply is not applicable for Desktop mounting workstation as it is not manufactured by OEM.	Bidder shall consider Workstations with Single Power Supply.
77	TPNODL/OT/2021-22/30/3/116	Overall brightness of each module : Minimum 2400 ANSI Lumens	Here we understand brightness onscreen mentioned can be achieved with lower Lumens module and it is provided OEM specific. Since it is mentioned DLP Technology : LED and 2400Lumens is available only in laser so kindly remove the same.	Consider Laser based VPS
78	TPNODL/OT/2021-22/30/5/118	Interfaces : IRIG-B port - 2	We request you to accept GPS based-time facility which supports either NTP or IRIG-B protocol.	As per RFP
79	TPNODL/OT/2021-22/30/8/119	Front-end Ports	FCoE protocol is a legacy protocol so majority of storage OEMs does not offer FCoE in their latest storage arrays. Therefore, requesting to remove the requirement of FCoE.	Bidder has to provide equivalent or higher version without any price implication to the TPNODL.
80	TPNODL/OT/2021-22/30/8/120	Snapshots	copy-on-first-write technique is supported only for a specific vendor so solution is boased to specific OEM. Request to also allow Redirect on Write Technique for Snapshot	Bidder has to provide equivalent or higher technology to meet the requirement.
81	TPNODL/OT/2021-22/30/5/118	Display digit requirements	We request you to modify clause Display Digit height equal or greater than 5.0cm	As per RFP
82	TPNODL/OT/2021-22/30/9/121	The switch should support auto-sensing 2, 4, 8 Gbps capabilities.	Currently SAN switches are with 16 Gbps will support upto 4 and 8 Gbps. It is requested for deletion of support auto-sensing of 2 Gbps.	Bidder has to provide equivalent or higher technology to meet the requirement.
83	TPNODL/OT/2021-22/30/11/123	Equipment must have one Console port, four or more GbE Ethernet Port, support 75 Gbps or more Firewall throughput and redundant power supply	Please confirm if bidder can offer Firewall with throughput inline with the actual requirement. 75Gbps throughput is far higher than required.	As per RFP
84	TPNODL/OT/2021-22/30/11/123	Network Firewall shall support Layer 3 feature with support for advanced IP Services	Elaborate more details on the required advanced IP services	Shall be discussed at the time of detailed engineering.

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
85	TPNODL/OT/2021-22/30/11/123	Firewall must have minimum 1 TB HDD for log storage.	Since HDD is older technology than SSD, most of the current appliances comes with SSD based storage as it occupies lesser space. Request to modify the clause as "Firewall must have minimum 400 GB of SSD / 1 TB of HDD for log storage."	Bidder should consider 500GB of SSD instead of 1TB HDD.
86	TPNODL/OT/2021-22/30/Appendix-D/253	80 Inch TV at Remote Locations	What device it will be connected ? It is requested to share technical specification. How it will be mounted?	TV shall be connected with one of the Workstation. Please refer Corrigendum-1 Wall mounted
87	TPNODL/OT/2021-22/30/Appendix-D/253	SCADA/ ADMS Bill of Material	The server quantity provided is too high, Request TPNODL to re-consider the Server quantities.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
88	TPNODL/OT/2021-22/30/Appendix-D/253	B/W Laser printer additional required for Bargarh, Bolangir, and Bhawanipatna Color Laser printer additional required for Bargarh, Bolangir, and Bhawanipatna	There is no technical specification provided for both type of printer. It is requested to provide minimum A4 size technical specification.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
89	TPNODL/OT/2021-22/30/Appendix-D/253	BOM	Kindly provide soft copy of price schedule for preparation of commercial offer.	Ok.
90	TPNODL/OT/2021-22/30/Appendix-D/253	Firewall	Kindly confirm the quantity mentioned for firewall in BOM at BCC are in non-redundant configuration.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
91	TPNODL/OT/2021-22/30/5.2.2.4 /108	Web servers	Please define the number of concurrent web users	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
92	TPNODL/OT/2021-22/30/2.1.4/51	ESB	Kindly confirm that ESB is in purchaser scope.	Interfaces shall be created using SAP PI and SOA based Web Services.
93	TPNODL/OT/2021-22/30/7.3/16	7.3 Delivery Terms	Kindly confirm if Project completion is 800 days or 1090 days as per the defined milestones? Warranty will start after project completion milestone of 1090 days?	Warranty period shall commence from the date of handing over of all deliverables in complete.
94	TPNODL/OT/2021-22/30/2.1.7.1/53	Software Configuration Management	Source code is the intellectual property of the OEM/Supplier. Source code shall be provided only for any project specific customizations as per clause 1.3 Scope of work. Kindly confirm.	No deviation is allowed.
95	TPNODL/OT/2021-22/30/3.6.9/38	Software Minimum Support Period	As per the Standard Industry Practice, the Support period should be total 10 years including warranty. Kindly reconsider.	No deviation is allowed.
96	TPNODL/OT/2021-22/30/4.6/43	The distribution of marks for experience in implementation of interface is as follows: <input type="checkbox"/> ESB over SOA – 1 marks <input type="checkbox"/> Secured ICCP – 0.5 marks <input type="checkbox"/> CIM (IEC-61968) - 0.5 marks	Purchaser is requested to also accept "Web Services or ESB over SOA " interface to get the marks.	This shall be as per Corrigendum-1 and No deviation is allowed.
97	TPNODL/OT/2021-22/30/4.6/43	Project Experience in RTU Implementation (i) IEC 870-5-104 – 0.25 marks (ii) IEC 62056 – 0.25 marks (iii) IEC 61850 – 0.25 marks (iv) IEC 870-5-103- 0.25 marks	IEC 62056 is DLMS protocol relevant for AMI systems and not applicable for SCADA/ADMS IEC 61850 and IEC-103 are substation protocols and RTUs will communicate with substation relays on these protocols and report relevant information to SCADA/ADMS on control center protocols like IEC-104, IEC-101 or DNP3. We request the purchaser to re-evaluate the scoring for this section.	This shall be as per Corrigendum-1 and No deviation is allowed.
98	TPNODL/OT/2021-22/30/4.11.2/101	Display Generation and Editing	From the available specifications it is not clear regarding which changes are required in displays from scripting tool. Since the important information is missing, exact design of solution is not possible before submission. In this regard, it is also requested to restrict the requirement of bulk changes to data modeling. We request to accept the standard tools available in our system.	Bidder has envisaged the solution in two parts as specified in Corrigendum-1. Display and TA Generation in Part Interface with GIS based Network and Manual designed Network using an automatic tool in part-B
99	TPNODL/OT/2021-22/30/10.2.10.2b.1/184	Frequency based load shed	The required load shed functionality from control center will not be able to operate fast enough as it will be depending on process time at field and control center, Communication delays etc. It is recommended to operate manual and/or rotational load shed from the control center and perform under-frequency load shed at the local substation level.	No deviation is allowed.
100	TPNODL/OT/2021-22/30/3.5.8/26	Expendable supplies	Kindly provide more details on the expendable supplies to be considered by supplier with examples.	Misc. items required to start and complete the project like LAN Cables, Printers, Stationeries, Internet Connectivity, etc.,
101	TPNODL/OT/2021-22/30/3.6.2/38	Right to change software	SCADA administrators shall be allowed to add, modify or delete database, displays and configuration settings allowed by the SCADA/ADMS software. Kindly confirm if this understanding is in line with the requirements	As per RFP
102	TPNODL/OT/2021-	Payment Terms	Request TPNODL to re-consider the Payment terms.	No deviation is allowed.

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
103	TPNODL/OT/2021-22/30/11/123	Equipment should have inbuilt support for IPsec VPNs, L2TP & PPTP VPN and it should also support threat free IPsec / L2TP / PPTP VPN. Equipment should support provide SSL-VPN solution with Web Access (Clientless), Full Tunnel and Split Tunnel control. Solution should provide per user / group SSL-VPN access	Request to modify this specification to- "Equipment should have inbuilt support for IPsec VPNs. Equipment should support provide IPSEC and SSL-VPN solution with Full Tunnel and Split Tunnel control. Solution should provide per user / group IPsec and SSL-VPN access" Most browsers (if they haven't already) don't support java anymore - which the java rewriter is the foundation block of clientless feature. Hence Clientless VPN feature is nowadays rarely used and rarely supported. Request to remove that from specification.	No deviation is allowed.
104	TPNODL/OT/2021-22/30/11/123	Firewall solution os must not have any vulnerability in OS from last 3 years (till 2018)	Request TPNODL to remove this clause for fair competition.	No deviation is allowed.
105	TPNODL/OT/2021-22/30/11/123 and 124	Equipment should have inbuilt support for DES, 3DES, AES, Serpent encryption and Pre-shared keys & Digital certificate based authentication connection tunnel.	Request to modify this specification to- "Equipment should have inbuilt support for DES, 3DES, AES and Pre-shared keys & Digital certificate based authentication connection tunnel". Serpent encryption is vendor specific and is not used by customers in real world, bidder request to remove.	Bidder has to provide equivalent or higher technology to meet the requirement.
106	General	Delivery schedule	Readiness of infrastructure is not mentioned in the schedule. Shall we assume that the Control Centre is/will be ready in all respect for commissioning Hardware immediately after shipment to site, please clarify	Control Center shall be ready in all aspect for the ITC of the System.
107	TPNODL/OT/2021-22/30/7.4/17	Warranty Period The complete solution including hardware/ software shall be under comprehensive on-site warranty for a period of 60 months from the date of project completion as mentioned in Scope of Work in Annexure II.	Warranty for SCADA should start after setting up MCC and BCC. ADMS warranty should start from the date of ADMS commissioning. Only ADMS specific hardware will get covered in ADMS warranty.	Warranty period shall commence from the date of handing over of all deliverables in complete.
108	TPNODL/OT/2021-22/30/3.5.3/35	Maintenance during Commissioning Any spare parts found to be defective during initial delivery inspection or during this period shall be replaced within one week after notification.	One week duration is too short for replacement. This is to be changed to 6 weeks minimum	No deviation is allowed.
109	TPNODL/OT/2021-22/30/3.5.3/35	Failed equipment shall be replaced or repaired and spares inventories (if any) replenished to their delivered level throughout the period of commissioning. Any spare parts found to be defective during initial delivery inspection or during this period shall be replaced within one week after notification. There shall be no charges to TPNODL for these replacement parts, including delivery charges. All spare parts replaced under maintenance shall be new parts unless otherwise accepted by TPNODL's facility.	Request TPNODL to provide a spare list.	Requested bidder to share the spares list in order to meet the SLA timelines during the warranty period.
110	TPNODL/OT/2021-22/30/14.1.1/233	Providing all SCADA/ADMS equipment and related support materials, including all interconnecting cables and wiring between all Supplier-provided equipment and between the SCADA/ADMS and any equipment furnished by TPNODL site	Please clarify on 'any equipment furnished by TPNODL site'	This shall be as per the deliverables as mentioned in the tender document.
111	TPNODL/OT/2021-22/30/14.1.1/234	Providing an environment that allows for reproducible execution of all SCADA/ADMS functional performance tests conducted during factory acceptance testing	As field equipments are not in the project scope, how the environment will set up to reproduce functional performance tests. Please clarify.	Bidder would set up an simulating tool where we can perform and test all functionalities mentioned in the RFP at the time of FAT.
112	TPNODL/OT/2021-22/30/14.1.1/234	Verification of existing infrastructure such as the power distribution, air conditioning, power grounding, seismic protection, dust protection, fire protection, equipment size, and other site requirements as necessary for the proper environmental control and operation of all SCADA/ADMS equipment	Verification of the infrastructure shall not be in supplier scope and this shall be excused from supplier scope. Infrastructure related activities like, arrangement of equipments under deliverables shall be in TPNODL scope. Room layout, power and LAN cable routing, interconnection diagrams, location of VPS, Operator WS and server rack shall be in TPNODL scope.	No deviation is allowed.

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
113	General		As detailed Corrigendum was issued by TPWODL and TPSODL for changes in BoQ and Payment terms, we request TPNODL to issue corrigendums on similar lines.	Please refer Corrigendum-1
114	General		Clause 1.3 on P33/368 is missing. Please specify the number of feeders, transformers, Load, Area and number of distribution sub-stations.	Please refer Corrigendum-1
115	TPNODL/OT/2021-22/030/TPNODL BoM/254	Security system (DMZ) - Layer II switch	No. of port for Layer II switch not mentioned 24 or 28 ports. Can we consider 24 ports for Layer II switch here?	Consider 24 Port.
116	TPNODL/OT/2021-22/030/TPNODL BoM/254	SAN Switch	Quantity of SAN Switch is not mentioned in BOQ. Kindly confirm.	Bidder needs to consider 24 Port redundant SAN Switch
117	TPNODL/OT/2021-22/030/TPNODL BoM/254	KVM Switch & sliding monitor	Quantity of KVM Switch & sliding monitor is not mentioned in BOQ. Kindly confirm.	Bidder has to consider Server Rack and KVM Switch with Monitor as per and along with the server quantities mentioned in the revised Appendix-D (BoQ)
118	TPNODL/OT/2021-22/030/TPNODL BoM/254	80" TV	80" TV specification is not mentioned. Kindly share specification.	Please refer Corrigendum-1
119	TPNODL/OT/2021-22/030/TPNODL BoM/254	Black & White Printer	Printer specification is not mentioned. Kindly share printer specification.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
120	TPNODL/OT/2021-22/030/TPNODL BoM/254	Colour Printer	Printer specification is not mentioned. Kindly share printer specification.	Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1
121	TPNODL/OT/2021-22/030/TPNODL BoM/254	Storage & Backup Devices (Desktop Cartridge Magnetic Tape)	As Tape Library (LTO) is already asked for in the specification, all backups are possible using this centralized device which is more suitable for a control room environment than a standalone portable tape unit is not required since it is EOL. Bidder requests the purchaser to delete the requirement of a desktop cartridge magnetic tape unit and its required ports / interfaces in servers and workstations.	Consider LTO
122	TPNODL/OT/2021-22/030/TPNODL BoM/254	Backup Server	Backup server is not considered in the tender. For archival and storage activity backup server will be needed to install backup software. Kindly mention BACKUP server quantity in the BOQ.	Bidder is responsible for the supply of the supply of all hardware required to meet the technical requirement specified in the RFP and the revised BoQ.
123	TPNODL/OT/2021-22/030/TPNODL BoM/254	Antivirus Server	Antivirus server is not considered in the tender. For antivirus software management and patch/and update a server will be needed. Kindly mention antivirus server quantity in the BOQ.	Bidder is responsible for the supply of the supply of all hardware required to meet the technical requirement specified in the RFP and the revised BoQ.
124	TPNODL/OT/2021-22/030/TABLE A/116	Workstation console -2 Speaker	Can we supply two external speaker?	As per RFP
125	TPNODL/OT/2021-22/030/TABLE A/116	Workstation console - Dual AC Power Supply in Watts	Workstation doesn't come with dual power supply as it is not manufactured by OEM. Kindly clarify.	Bidder shall consider Workstations with Single Power Supply.
126	TPNODL/OT/2021-22/030/TABLE A/116	Workstation consoles - Port for cartridge magnetic tape drive	Workstation doesn't come with cartridge magnetic tape port. Hence, we request you to remove magnetic port requirement from the Workstation console. Kindly confirm.	Port for cartridge magnetic tape drive shall not be required.
127	TPNODL/OT/2021-22/030/TABLE A/116	Workstation consoles -Diagonal Viewable size 24"	Typically 24inch monitor available from standard OEM come with diagonal viewable size is 23.5 inch. Kindly confirm.	Bidder has to provide equivalent or higher version without any price implication to the TPNODL.
128	TPNODL/OT/2021-22/030/TABLE A/115	Server - RAS feature	Server doesn't come with hot swappable pluggable/ replaceable PCI Controllers. It is not manufactured by OEM. Hence, we request you to remove such RAS feature from the Workstation console.	Noted only for PCI Controller. RAS features shall be required only for the hardware installed in Data Center only.
129	TPNODL/OT/2021-22/030/TABLE A/118	SAN Switch - Through put	SAN switch through put is not mentioned.	Based on the proposed solution, bidder can calculate and propose the same without any impact on system performance. If any upgradation requires to meet the system performance in future, same shall be done by the bidder without any additional cost to TPNODL.
130	TPNODL/OT/2021-22/030/TABLE A/119	SAN Storage- Front-end Ports	Majority of storage OEMs does not offer FCoE protocol. It is a legacy protocol. Hence requesting to remove the requirement of FCoE.	Bidder has to provide equivalent or higher version without any price implication to the TPNODL.
131	TPNODL/OT/2021-22/030/TABLE A/119	SAN Storage - Storage Capacity & Performance Configured & Disk Support	15K disks are no longer being used (are end of life). It is not manufactured by OEM. Hence, we request you to remove 15K rpm disks requirement. Kindly confirm.	Bidder can equivalent or higher technology to meet the requirement.
132	TPNODL/OT/2021-22/030/TABLE A/119	SAN Storage - Point No 4 (Front-end Ports)& Point No 9(Protocols Support)	In point no 4, minimum 4 ports with 16Gbps is asked, and in point no 9, 8 ports x 8Gbps is asked. It is contradictory to each other. As per front end ports requirement and the latest available speed is 16Gbps for FC ports, hence 4 * 16, which is equivalent to requirement of 8 x 8 Gbps. Kindly clarify.	Consider as per Point No. 4.
133	TPNODL/OT/2021-22/030/TABLE A/119	The switch should support auto-sensing 2, 4, 8 Gbps capabilities.	Currently SAN switches are with 16 Gbps will support up to 4 and 8 Gbps. It is requested for removal of support auto-sensing of 2 Gbps.	Bidder has to provide equivalent or higher technology to meet the requirement.
134	TPNODL/OT/2021-22/030/TABLE A/123	Firewall must have minimum 1 TB HDD for log storage.	Since HDD is older technology than SSD, most of the current appliances comes with SSD based storage as it occupies lesser space. Request to modify the clause as "Firewall must have minimum 400 GB of SSD / 1 TB of HDD for log storage."	Bidder should consider 500GB of SSD instead of 1TB HDD.
135	TPNODL/OT/2021-22/030/	NMS requirement (specification /nodes)	In the BOQ, NMS server is considered however NMS specification is not mentioned in tender document.	Please refer Corrigendum-1

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
136	Clause no. 3.1 Bid Submission & Clause no. 3.8 Earnest Money Deposit (EMD)	FIRST PART: "EMD" of Rs. 10,00,000/- (Rupees Ten Lacs Only) shall be submitted. The EMD shall be valid for 180 days from the due date of bid submission in the form of BG/Bankers Pay Order favouring "TP Northern Odisha Distribution Limited", payable at Balasore only.	There are different validity period is mentioned for EMD, i.e. 180 days under clause no. 3.1 and 210 days under clause no. 3.8. As bid validity period is 180 days from the date of submission of bid, we are assuming validity period of EMD is also 180 days. Please confirm.	It is clerical mistake, please note that EMD shall be valid for 210 days from the due date of bid submission
137	Clause No.7.3 Delivery Terms		Part-B-ADMS is not applicable as scope is SITC of SCADA as per Clause 1.1	Please refer Corrigendum-1
138	Clause No.7.5 Payment Terms	Part-A	Kindly amend the Payment terms as	Please refer Corrigendum-1
139	Clause No.7.5 Payment Terms		Part-B-ADMS is not applicable as scope is SITC of SCADA as per Clause 1.1	Please refer Corrigendum-1
140	Annexure-I	Schedule of Items	Kindly revise Annexure-I as per Scope i.e related to SCADA only.	Please refer Corrigendum-1
141	Annexure-I & Clause 7.4	Note & Warranty Period	The complete solution including hardware/ software shall be under comprehensive on-site warranty for a period of 60 months from the date of project completion as mentioned in Scope of Work in Annexure II or 66 months from the date of last major supply which ever is earlier.	No deviation is allowed.
142	3.5.3 Maintenance during Commissioning		Defective spare parts will be replaced within reasonable time period that will not affect over all completion time of project.	No deviation is allowed.
143	3.5.4 Maintenance under Warranty (60 months) 3.6.6 Maintenance under Warranty (60 months)		The Minimum response time shall be 48-72 hours from the intimation of the issue from TPNODL. Penalty shall be applicable post 72 hours only if issue is not resolved. the cumulative total penalty (during the entire contract period) shall be limited to maximum 1% of total contract value. The deduction methodology shall be discussed during order finalization.	No deviation is allowed.
144	3.5.7 Hardware Minimum Support Period		In case OEM declares obsolescence of a product, the support service shall be as per the product life cycle policy as issued by OEM.	No deviation is allowed.
145	3.6.2 Right to Change Software		Software Change Access can be provided after system handover to TPNODL. However access shall be provided for Development & Engineering purpose.	As per RFP
146	3.6.9 Software Minimum Support Period		In case OEM declares obsolescence of a product, the support service shall be as per the product life cycle policy as issued by OEM.	No deviation is allowed.
147	Volume-2	Technical Specification	With reference to Clause 1.1, we are considering only SCADA related specifications and functionalities.	Please refer Corrigendum-1
148	3.7 Contract Price/ Value 6.4 Quantity Variation	GCC	Following point to be included in the clause: The items which are supplied in line with agreed price schedule, but not installed due to any reasons, shall be paid in full.	If that item will be approved by TPNODL at the time of drawing approval then only TPNODL will pay for the same.
149	4.0 SCOPE OF WORK 4.8 Rights of TPNODL to vary the scope work	GCC	Following points to be included under this clause: 1) Change Order Clause: - Either Party shall have the right to propose changes to the other Party that are considered necessary or desirable to improve the quality, efficiency or safety of the works agreed under the Contract. - Such proposal may cover, including but not limited to, scope, design, specification, calculations, makes, sizes, quantity, deliverables, milestones, schedule or documents etc, during the performance of the contract to make any changes, variations, modifications, additions or omissions to, in or from the works ("Change"). The requesting Party shall prepare the change requirement or request for change (RFC) describing affected item, purpose, justification, impact and effective timelines of such Change - The requesting Party shall submit the RFC to other Party for analysis and review. The receiving Party, if required, may seek further details, clarifications or information prior to conveying its decision to the requesting party. However, receiving Party shall convey its decision to the requesting party within 7 (seven) calendar days. On converging to the need for change, the Purchaser shall amend the related document within 7 (seven) calendar days including purchase order, agreement, schedules, statement of work or any other necessary document. 2) The downward adjustment of contract price is not envisaged in this project.	Not acceptable. This clause shall be firm as per tender.
150	6.0 TERMS OF PAYMENT	GCC	In case there is a delay in achieving the milestone for reasons not attributable to Associate, then TPNODL will make the payment of respective milestone within 15 days of completion/payment schedule.	Not acceptable. This clause shall be firm as per tender.
151	6.0 TERMS OF PAYMENT	GCC	Following point to be included in the clause: Certification of acceptance by TPNODL shall be done within 1 week of receipt of material at site.	Not acceptable. This clause shall be firm as per tender.

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
152	6.3.1 Statutory Deductions	GCC	As the work is limited to control center activities, water and electricity shall be provided to Associate free of cost.	Ok noted. It shall be provided based on availability.
153	6.3.1 Statutory Deductions	GCC	As there is no civil work is bidder's scope, BOCW act & BOCW cess is not applicable for the bidder.	Request to all bidder to submit the bid with same query. The reply of the same shall be provided at the time of technical evaluation.
154	12.3 Failure in Guarantee Period (GP)	GCC	We propose following changes in the clause: If during the Warranty/Guarantee period some parts of the supplies are replaced owing to the defects/ damages under the Warranty, the Warranty period for such replaced parts shall be until the expiry of twelve months from the date of such replacement or renewal or until the end of original warranty period, whichever is later.	Not acceptable. This clause shall be firm as per tender.
155	12.3 Failure in Guarantee Period (GP)	GCC	The term 'Penalty' needs to be replaced with 'Compensation' and the clause to be modified as hereunder: Any repairs during the Guarantee Warranty Period shall be carried out by the Associate within 30 days of reporting the issue to Associate by TPNODL. However, if replacement of the Equipment is required, Associate shall notify the same to TPNODL within 7 days of reporting the issue by TPNODL. Thereafter, the total time for supply of new equipment/ material shall be equal to the original delivery period of that equipment/ material as specified in the Contract. In case the Associate is not able to rectify/ replace the faulty equipment/ material within the stipulated timelines as mentioned above, compensation penalty shall be claimed as per the Liquidated Damages clause mentioned in this document. The penalty amount shall be recovered from the payment due to the vendor or by encashment of the SPBG as the case may be.	Not acceptable. This clause shall be firm as per tender.
156	12.6 Latent Defect	GCC	We propose this clause needs to be modified as hereunder: Hidden defects in manufacturing or design of the product supplied and which could not be identified by the tests conducted but later manifested during operation of the equipment are termed as latent defects. Associates shall further be responsible for 'free replacement' during the subsistence of the warranty period for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Company.	Not acceptable. This clause shall be firm as per tender.
157	13.7 Support beyond the Guarantee Period	GCC	At present the offered products are not declared obsolete by OEM. In case OEM declares obsolescence of a product, the support service shall be as per the product life cycle policy as issued by OEM.	Support service shall be provided by OEM as per SLA
158	13.0 Liquidated Damages	GCC	We propose following LD clause: 1) Liquidated damages @0.25% of the total un-executed portion of the contract value per week or part thereof, for the period of delay in integrated completion, subject to maximum 5% of the value of the unexecuted portion of the contract. The cumulative liquidated damages on all the counts shall not exceed 5% of the value of the unexecuted portion of the contract. Liquidated damages should be the sole and exclusive remedy available to TPNODL. 2) LD shall be applicable only if the Associate fails to deliver/perform due to reasons solely attributable to the Associate 3) LD should be levied only if delay analysis is signed off between TPNODL and Associate and it is established that the delay is on account of Associate.	Not acceptable. This clause shall be firm as per tender.
159	16.5 Violation	GCC	The clause needs to be modified as hereunder. In case of violation of this clause, the Associate is liable to pay compensation and damages as per the terms of this contract may be determined by the competent authority of TPNODL.	Not acceptable. This clause shall be firm as per tender.
160	17.0 INTELLECTUAL PROPERTY RIGHTS	GCC	Please add the following: The Associate cannot be held liable if the product or a part thereof has been altered or modified by TPNODL or a third party. In the event of any infringement, TPNODL must give Associate the sole right to control the defense and settlement. Also, the TPNODL must promptly notify the Associate of any claims and provide necessary co-operation.	Can be discussed at the time of bid evaluation
161	18.0 INDEMNITY	GCC	Please qualify that the responsibility of the Associate would arise only on account of reasons 'solely attributable' to the Associate and on account of gross/ willful negligence.	TPNDOL Contracts Team to reply

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
162	20.0 FORCE MAJEURE	GCC	<p>1) The term 'Pandemic' needs to be included under the Force Majeure Clause.</p> <p>2) The below mentioned new clause to be incorporated as per global guidelines:</p> <p>"Notwithstanding any provision to the contract, customer agrees that any stoppage, hindrance, delay or inability to manufacture, deliver or perform arising from or due to the current Covid-19 pandemic or events subsequent (including but not limited to changes in laws, regulations, by-laws, quarantine and movement controls or restrictions) will be considered an excusable delay by Schneider without any consequence or any liability including, without limitation, delay penalties, liquidated or other damages or termination for default".</p>	Can be discussed at the time of bid evaluation
163	21.0 SUSPENSION OF CONTRACT 21.1 Suspension for Convenience	GCC	<p>1) The notice period needs be modified:</p> <p>"TPNODL may, at any time and at its sole option, suspend execution of all or any portions of the schedule of items of contract to be supplied/work to be executed by Associate under the contract by providing to the Associate at least two 15 business days written notice for contracts having contract completion period less than sixty days and at least seven 15 business days' notice for all other contracts".</p> <p>2) Please also add the following point:</p> <p>The Associate shall have right to suspend the supply and services in part or whole if any payments are withheld beyond 15 days of the agreed payment terms. If such suspension continues for more than 60 days, then the Associate shall have right to terminate the contract.</p>	Can be discussed at the time of bid evaluation
164	22.0 TERMINATION 22.2 Termination for convenience of Associate	GCC	<p>This clause needs to be modified:</p> <p>"Associate at its convenience may request for termination of contract, clearly assigning the reason for such request. TPNODL has full right to accept, reject or partially accept such request. This convenience will be available to associate only after one year from the contract effective date. For this purpose, associate will provide a notice period of 30 90 days to TPNODL , Associate will have to pay TPNODL a 'termination convenience fee' equivalent to 5% of unexecuted contract value".</p>	Can be discussed at the time of bid evaluation
165	22.3 Termination for Convenience of TPNODL	GCC	<p>Please add the following:</p> <p>TPNODL must release any bank guarantee provided by the Associate;</p> <p>In any case of termination and/or project being scraped/ purged for whatever reasons, the Associate shall receive from TPNODL the full payment towards all the work performed, including but not limited to, certified or not; all payments due towards confirmed commitments with respect to costs of materials, goods and services ordered by the Associate with its Sub-Associates or Sub-suppliers for performance of this Contract, including the once delivered at site and/or are under transit.</p> <p>The Associate shall also be entitled for payment with reasonable profit by the TPNODL on the part of the terminated works; payment of a sum representing 10% of the contract price as a termination fee.</p> <p>In addition, the Associate shall have all other rights and remedies to which he is entitled under this Contract and/or at law".</p>	Can be discussed at the time of bid evaluation
166	23.0 DISPUTE RESOLUTION & ARBITRATION	GCC	We request the venue of arbitration to be changed to New Delhi.	Ok noted. It can be Odisha
167	25.1 Cancellation	GCC	This clause is not agreed. Request you to kindly delete this clause.	Not acceptable. This clause shall be firm as per tender.
168	28.0 TRANSFER OF TITLES	GCC	<p>Any addition/deletion of any clause shall be subject to mutual agreement.</p> <p>Please add the following:</p> <p>TPNODL shall pay all the amounts due under the contract to the Associate prior to transfer of the titles.</p>	Not acceptable. This clause shall be firm as per tender.
169	26.0 INSURANCE	GCC	The insurance policy shall cover IT Hardware and shall not cover Software portion. Further, workmen compensation policy for the manpower deployed by Associate at site will be taken by Associate.	Not acceptable. This clause shall be firm as per tender.
170	26.0 INSURANCE	GCC	Following are the Clarification BA shall be the principal Policy Holder and a copy of Insurance Certificate giving evidence of the cover can be submitted.	Not acceptable. This clause shall be firm as per tender.

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
171	Clause 2.1/Page 10	Price Variation Clause	We request TPNODL to include price variation clause considering long term system maintenance is under bidder scope. Please find attached formula used by other utilities related to price variation. Please refer Appendix I	Not acceptable. This clause shall be firm as per tender.
172	Clause 4.7/Page 14	Reverse Auction	We request TPNODL to remove Reverse auction since already a closed envelop bidding is being carried out for the project.	Not acceptable. This clause shall be firm as per tender.
173	Clause 5.0/Page 15	Award Decision - TPNODL reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without assigning any reason thereof	Since the pricing is also largely dependant on overall volume of project, hence we request the part ordering clause be removed.	No deviation is allowed.
174	Clause 7.5/Page 17	Payment Terms	The payment terms as per RFQ are very stringent and affect bidder's ability to sustainably execute the contract. We sincerely request TPNODL to follow the payment terms of TPSODL/TPWODL owing to similar nature of enquiry.	Please refer Corrigendum-1
175	Page No. 32	PBG for 3% of Contract Value shall be submitted valid for Contract Validity Period plus three month	This is not inline with Clause 7.1 Special Conditions of Contract which states that PBG of 3% order value shall be valid till contract period.	TPNODL Contracts Team to reply
176	Page No. 32	Note: All the prices quoted above include 60 months warranty on all software from the date of project completion. However, all hardware warranty shall be with 84 months warranty 24*7*365 days basis.	We request TPNODL to consider 60 months warranty uniformly for all Hardware & software. Same is inline with TPSODL & TPWODL having similar scope of supply.	No deviation is allowed.
177	Clause 3.5.4/Page 36 & Clause 3.6.6/Page 39	Maintenance Under Warranty: Failure by the Supplier to comply with the above mentioned timelines, shall attract a penalty @ Rs. 5000 per hour.	The total penalty/ceiling shall be capped to the price of the component failed.	As per RFP
178	Clause 1.3/Page 46	Study of existing deployed Micro SCADA and migration along with interfaces planned by TPNODL	Kindly provide details about the Micro SCADA system, and what migration is proposed by TPNODL	TPNODL is in process of setting up a small SCADA System to monitor and control up to 50 Grid Substations. Migration of IO Points along with parameters and technical address of IEC 104 of the Grid Substation/RTU needs to be migrated to new system.
179	Clause 5.11; Server Specifications/Page 115	1. Processor- 2 x 3.2GHz 16core processor 4. L3 cache: 20MB Minimum 10. Storage Connectivity: Server should be configured with two dual port 8Gbps Fiber Channel adapter to connect to external storage 12. Additional port: Server should support 2 Number of 10G Fiber Ethernet Ports with SFP 17. RAS feature Should have RAS features such as Hot swappable disks, Hot pluggable/replaceable PCI Controllers, Power Supplies, Cooling fans etc	1. We understand that 2x3.2 GHz, 8 core each (total 16 core) processor is required. 4. 11 MB with each cpu , total 22 MB 10. FC card is required for ISR servers only, hence we request the same not be considered for remaining servers. 12. We understand your requirement is to have a blank pci slot be available to add 10G port card, for future purpose. 17. PCI card can not be hot pluggable with any OEM. Request to remove this.	As per RFP Noted only for PCI Controller. RAS features shall be required only for the hardware installed in Data Center only.
180	Clause 5.11; Workstation Console/Page 116	6. Interfaces: Port for cartridge magnetic tape drive 9. Dual AC Power Supply (in Watts)	6. USB ports will be available to connect USB DAT drives (not tape drive) 9. Dual power supply options doesn't come with any OEM.	1. Port for cartridge magnetic tape drive shall not be required. 2. Bidder shall consider Workstations with Single Power Supply.

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
181	Clause 5.11; 8. SAN storage/Page 119	<p>1. Storage Architecture: SAN Storage System with no single point of failure architecture. Storage subsystem should also be able to support Unified (SAN & NAS) as an integrated offering. Management of storage system should be through single management tool.</p> <p>2 Storage Controller :System to have minimum Two controllers, each controller to have 64 bit Quad -core or higher CPU</p> <p>3 Storage Cache / System Memory :The system should have a minimum of 64GB of system memory mirrored across dual SAN controllers. The SAN storage system must keep write cache persistent during fault conditions. Array should support cache de-stage to disk or battery backed cache in order to avoid any data loss due to abrupt power outage</p>	<p>Tender requirement is to have 2X20TB storage for MCC & BCC each, both in phase A(SCADA) & phase B(DMS). Our system design philosophy employs common Storage for integrated SCADA & ADMS instead of separate. Duplicacy of Storage is unnecessary as Storage in Phase -A can be sufficient for online backup of both phases. Further, we propose two types of storage (1 SAN for ISR & 1 NAS for Backup) instead of Unified storage. We confirm this will meet the compliance.</p>	<p>Separate storage shall be required for both MCC and BCC.</p>
182	External DAT Drive	<p>1.Desktop Cartridge Magnetic</p> <p>2. Tape Library</p>	<p>Please confirm what is to be considered for External DAT drive, is it Tape Library or Tape Drive as TS has specifications of both.</p>	<p>Consider LTO</p>
183	Clause 5.11; 11. Firewall/Page 119		<p>Firewall specification is aligned with single OEM only. Usually in control center , two type of firewall should be used for separating the zone like production, PDS, DMZ etc. Few points below will be deviated when selecting other OEM for 2nd firewall, i.e.</p> <ol style="list-style-type: none"> 1. Specific ICS/SCADA-AWARE Functionality IEC 61850 and IEC60870-5-101 is not supported by other OEMs 2. Detect and analyse anomalies across network like unexpected connection requests originating from substation for a resource in another substation or Master SCADA DOS events - not supported 3. Flash based firmware supported instead of HDD(as per tender) since flash has faster access. 4. Field Upgradeable RAM is not permitted by OEMs 5. Tender asks that Firewall must not have vulnerability in OS in last 3 years, however, OEMs recommend that all vulnerabilities identified in last 3 years must be patched as Cyber threats continue to evolve and it is not possible to have zero vulnerability even in air-gapped systems. 6. Firewall administrator must detect administrator login at irregular hour is a very OEM specific clause and hence not complied for 2nd firewall. 	<p>Please refer Corrigendum-1</p>
184	Missing specifications		<p>Please share specifications of following:</p> <ol style="list-style-type: none"> a) NMS b) AV c) Patch Management d) Backup e) HIDS f) 80 Inch TV 	<p>Please refer Corrigendum-1</p>
185	Appendix-D BOM	Equipment Quantities	<p>The quantities appearing in BOM appear to be on higher side(multiple lots) when compared to the system requirement & proposed architecture, and also to similar sized TPSODL & TPWODL tenders. We request to share revised BOM.</p>	<p>Please refer revised Appendix-D (BoQ) as specified in Corrigendum-1</p>
186	General Query		<p>Please confirm if Virtualization of Hardware resources as per Bidder design practice is acceptable.</p>	<p>Please refer Corrigendum-1</p>
187	General Query		<p>In line with similar tenders eg. TPSODL ADMS, please confirm if ESB for system interfacing is in TPNODL scope.</p>	<p>Interfaces shall be created using SAP PI and SOA based Web Services.</p>
188	Annexure-VII General Scope of		<p>This section does not seem relevant to the Tender, and hence may be removed.</p>	<p>TPNDOL Contracts Team to reply</p>
189	General Query		<p>We understand any RTU side configuration including End to end testings shall be in Purchaser scope.</p>	<p>Availability and validation of signals, its quality & closing of punch points, if any at the SCADA/ADMS end shall be in bidder socpe.</p>
190	GCC Clause 20	Force Majeure	<p>Suitable Extension of Time shall be provided to Bidder if a Force Majeure event is enforced. Further, Please include Epidemic/Pandemic as a Force Majuere condition.</p>	<p>TPNDOL Contracts Team to reply</p>

Sl. No.	Tender Reference	Description as per Bid Document	Bidder's Pre-Bid Query	TPNODL's Response
191	GCC Clause 6.5	Quantity Variation	Variation of +/-10% of individual items limited to +/-5% of contract value shall be acceptable. Any variation beyond this shall call for renegotiation & mutual agreement on the item prices. Further, any items which are supplied but not installed due to reasons attributable to TPNODL shall be paid for in full.	TPNDOL Contracts Team to reply
192	GCC Clause 25.1	The Company reserves the right to cancel, add, delete at its sole discretion, all or any terms of this GCC or any contract, order or terms agreed between the parties in pursuance without assigning any reasons and without any compensation to the Associates	We request to delete this clause as this is not a fair clause	TPNDOL Contracts Team to reply

CORRIGENDUM - 1

Revised Scope of work & BoQ will be as follows.

1. Scope of Work

Part-A: - SCADA

- Study of existing deployed Mini SCADA and migration along with interfaces planned by TPNODL
- Establishment of Hardware & software along with peripheral accessories for SCADA Control Centre & Back-up centre at TPNODL i.e., MCC at Balasore and BCC at Bhubaneswar.
- Supply, installation, integration & commissioning of Supervisory Control and Data Acquisition(SCADA) system and Information Storage & Retrieval (ISR) Functions.
- **Manual Display Generation for 33KV and 11 KV up to DT only and Alarm Generation, SoE, Analog Calculation & Modification and Tag System etc.**
- **Basic SCADA applications along with Network Connectivity Analysis (NCA) & Distribution operational modification (Jumper, Ground & Cut)**
- SCADA Dispatcher training simulator (DTS)
- Real time data acquisition from DCU/RTU/FRTU over IEC 60870-5-104 to MCC & BCC
- Preparation of real time reports as per TPNODL customization and capturing operational event carried out by operators.
- Training & Hand Holding.
- Providing complete System Documentation and User Manuals
- Providing necessary tools & licenses for all the software & hardware
- Providing warranty & guarantee of supplied system.

Part-B: - ADMS

- Establishment of Hardware & software along with peripheral accessories for DMS & OMS
- Control Centre & Back-up centre at TPNODL i.e MCC at Balasore and BCC at Bhubaneswar.
- Supply, installation, integration & commissioning of Distribution Management & Outage Management System and Information Storage & Retrieval (ISR) Functions
- **Network Import from GIS at 11KV & below network for entire TPNODL Geography & Demography and all specification mentioned in terms of DMS & OMS with following functions:-**
 - Network Connectivity Analysis (NCA)
 - Distribution Power Flow (DPF)
 - Load Shed Application (LSA)
 - Fault Detection Isolation and Restoration (FDIR)
 - Outage Management System
 - Prediction logic
 - Trouble Call Management
 - Switching Procedure Management
 - ADMS Dispatcher training simulator (ADTS)
- Integration with various OT/IT systems like GIS, ERP (SAP), MDM, AMI etc on impending Interfaces and provisioning of ESB interface over SOA/Web services.

- Preparation of real time reports as per TPNODL customization and capturing operational event Carried out by operators.
- Providing complete System Documentation and User Manuals
- Training & Hand Holding
- Providing necessary tools & licenses for all the software & hardware
- Providing warranty & guarantee of supplied system.

Note: - all the specifications are as per RFP and clarification given in Corrigendum-1. The Scope has been classified based on priority of work execution requirement of TPNODL. Project schedule shall remain same.

2. Revised Appendix – C

S. No.	Grid Name	SPI	SC	DPI	DC	MF/IT	ST
A	33 KV PSS	150	15	15	15	300	10
	Sub -Total@215 PSS	32250	3225	3225	3225	64500	2150
B	RMU/SEC/Auto	8	2	2	2	10	0
	Sub-Total	11760	2940	2940	2940	14700	0
Grand Total		44010	6165	6165	6165	79200	2150

TPNODL 11 KV Distribution Automation Equipment

PROPOSED	UoM	TPNODL				
		Year-1	Year-2	Year-3	Year-4	Year-5
RMU	Nos.	0	20	70	70	80
Sectonalizer	Nos.	0	35	75	75	60
Auto-Reclosure	Nos.	0	15	25	25	20
FPI	Nos.	0	200	250	250	200

3. Bill of Material for Part-A & Part-B (Revised Appendix – D)

Part A: - Tentative SCADA BoM

S. No.	Equipment		Balasore (MCC)	Bhubaneshwar (BCC)	Total
1	Server/ workstation Hardware with panel Rack	Unit			
	SCADA server	No.	2	2	4
	FEP server with interface switches	No.	2	2	4
	ISR server	No.	2	2	4
	NMS/Security server	No.	2	2	4
	DTS server	No.	1	1	2
	Developmental server	No.	1	1	2
	ICCP Server	No.	2	2	4

	Web/Directory server	No.	2	2	4
	Workstation with dual TFT Monitors additional required for Bhadrak, J. Road, Keonjhar and Baripada	No.	10	10	40

S. No.	Equipment		Balasore (MCC)	Bhubaneswar (BCC)	Total
1	Server/ workstation Hardware with panel Rack	Unit			
	Developmental console with dual TFT	No.	5	5	10
	DTS/Workstation Console with dualTFTs	No.	5	5	10
	Laser based Video Projection system with 2x3 Module configuration with each module at least 67" diagonal withcommon projector at MCC and 80 InchTV for Bhubaneswar, Bhadrak, J. Road, Keonjhar & Baripada	No.	1 VPS	(1+4) 80 inchTV	6
	<u>Storage & Backup Devices</u>				
	External Mass storage device (for 3year online backup)	No.	2	2	4
	External drive	No.	2	2	4
	<u>Switches</u>				
	Layer III switch (SCADA)	No.	4	4	8
	Layer III switch (Development systemLAN)	No.	2	2	4
	<u>Security system (DMZ)</u>				
	Firewall & network IDS/IPS	Nos.	4	4	8
	Layer III switch	No.	2	2	4
	<u>Other Active Devices</u>				
	GPS Time synchronization system	Set	2	2	4
	Time, day & date digital displays	Set	1	1	2
	<u>Cabling System</u>				
	Cable, Jacks, Patch Panel etc. additional required for Bhadrak, J. Road, Keonjhar & Baripada	Lot	1	1+4	6
2	Software for Control Centre				
	SCADA software	Lot	1	1	2
	ISR Software	Lot	1	1	2
	DTS software	Lot	1	1	2
	Developmental software	Lot	1	1	2

S. No.	Equipment		Balasore (MCC)	Bhubaneswar (BCC)	Total
1	Server/ workstation Hardware with panel Rack	Unit			
	Network Management Software/Cyber Security	Lot	1	1	2
	WEB server	Lot	1	1	2

Part-B: - ADMS (DMS & OMS)

S. No.	Equipment		Balasore (MCC)	Bhubaneswar (BCC)	Total
A	Server/ workstation Hardware with panel	Unit			
	ADMS server	No.	2	2	4
	ISR server	No.	2	2	4
	GIS interface Server	No.	2	2	4
	Proxy /interface Server	No.	2	2	4
	Storage & Backup Devices				
	External Mass storage device (for year online backup)	No.	2	2	4
	External DAT drive	No.	2	2	4
B	Software for Control Centre				
	ADMS Software	Lot	1	1	2
	ISR Software	Lot	1	1	2
	GIS Adaptor/Engine for importing data from GIS system	Lot	1	1	2
	Proxy / Interface server	Lot	1	1	2

Note:-

- ✓ The above BoM are minimum requirement envisaged by Customer. Bidder can provide better configuration to meet the specification without Virtualization of hardware resources.
- ✓ System Sizing & Resources utilisation calculation shall be provided by bidders in technical Offer.
- ✓ The Offered solution shall be 100 % expandable without any additional cost to TPNODL
- ✓ Bidder has to submit unpriced BoQ based on the proposed solution as a part of the technical bidsubmission.

4. Evaluation Criteria

The Bids will be evaluated economically and technically (in terms of price, quality, technical merit, functional characteristics, schedule, after-sales service, local support in India and technical back-up). The technical merits and quality and functional characteristics of the offered equipment and work will be evaluated in terms of its ability to meet specific technical requirements included in the Contract Documents. The Bidder shall therefore be prepared to submit at the request of TPNODL adequate information or conduct system demonstration to substantiate that the offered equipment or Work meets the intent of the technical requirements. The offered equipment or Work will also be evaluated in terms of whether it is one of a kind or has been used extensively for similar applications. TPNODL shall be fully entitled to adopt whatever means it deem fit to evaluate the bids at its sole discretion, which shall not be questioned by the bidder under any circumstances whatsoever.

- The evaluation team will thoroughly review the proposals submitted by various bidders / consortiums. The broad evaluation will be based as following: -
 - Technical Proposal: 50% Weight
 - Price Proposal: 50% Weight
 - Pre-demo meetings will be conducted with all the bidders
 - Each of the bidder will be requested to demonstrate the product and services
 - **Minimum qualification mark for technical score as mentioned in the RFP shall be 40 out of 50. In case bidder fails to secure minimum marks. The bid shall not be further evaluated.**
- TPNODL, in observance of best practices, shall:
 - Maintain the bid evaluation process strictly confidential
 - Reject any attempts or pressures to distort the outcome of the evaluation, including fraud and corruption
 - Strictly apply only and all of the evaluation and qualification criteria specified in the Bid document

Evaluation and Comparison of bids

The bids shall be evaluated by combining technical and commercial scores and will be awarded to the Bidder whose Bid has been determined to be have scored maximum in the composite formula as defined below:

Total Score = 50% x Technical Proposal Score + 50% x Price Proposal Score

Initially the Supplier's responses are reviewed for compliance with the Commercial terms and conditions. The Suppliers who fail to comply with any of the commercial terms and conditions mentioned may be termed as non-responsive and will not be evaluated further. For those Suppliers who have qualified the commercial terms and conditions Technical evaluation will be conducted followed by the Price-Bid evaluation. The price bids will remain sealed until the technical evaluation is complete.

Technical Evaluation

The technical bid has a weightage of 50%. Technical evaluation will happen in two stages.

Stage-1: Preliminary Evaluation

In stage-1, the following shall be confirmed: Deviations, Submission of Bank Guarantee, Acceptance of terms and conditions, Acceptance to scope of work and compliance to technical specification (as mentioned in Volume-2). In case the bid doesn't meet all the mandatory requirements, the bid shall be termed as non-responsive and will not be evaluated further.

Stage-2

The distribution of weights shall be as follows:

Table: Distribution of weights for bid evaluation

No	Description	Weight	
A	Technical Proposal		50
1	Project Experience	22	
2	Presence in India	05	
3	Team Details (CV)	08	
4	Pre-Demo	15	
B	Price Proposal		50
	Total Marks		100

Details for each of the above parameters is as mentioned subsequently.

Technical Proposal: Following is the methodology which shall be used to evaluate the various parameters under the technical proposal.

Technical solution Evaluation

Score for Technical Evaluation

S. No.	Description	Max Score
Technical Solution Score		50
1	Project Experience	22
a)	Number of SCADA/ADMS project successfully completed in last 8 years as meeting the Technical Requirements	7
	3 marks shall be awarded for a single project meeting the functionality of SCADA/EMS/DMS/OMS as mentioned in the QR. In case multiple projects are submitted as a support for meeting the QR, 2 marks shall be awarded for each project subject to a ceiling of 4 marks. The project should have similar or up-graded software product versions offered to TPNODL	
b)	Project experience in implementation of modules/applications of SCADA/ADMS Systems	4

	<p>1 mark shall be awarded for experience in implementation of modules/applications as mentioned below: -</p> <ul style="list-style-type: none"> (i) Voltage VAR Control (ii) Load Shedding (iii) State estimator (iv) Fault isolation & service restoration <p>The bidder shall be awarded 1 mark for implementation of above modules in one project or multiple projects put together.</p> <p>For implementation of single module, only 1 mark shall be awarded, irrespective of its implementation in number of projects.</p>	
c)	<p>Project Experience in integration of IT applications.</p> <p>The distribution of marks for experience integration of IT applications is provided as follows: -</p> <p>GIS – 2 Marks</p> <p>ERP – 1 Marks</p>	3
d)	<p>Project Experience in RTU Implementation</p> <ul style="list-style-type: none"> (i) IEC 870-5-104 – 2 marks (ii) IEC 62056 – 1 mark (iii) IEC 61850 – 2 marks (iv) IEC 870-5-103- 1 marks 	6
e)	<p>Experience in implementation of interface used in SCADA/ADMS Systems. The distribution of marks for experience in implementation of interface is as follows: -</p> <ul style="list-style-type: none"> (i) ESB over SOA – 1 mark (ii) ICCP – 0.5 marks (iii) CIM(IEC-61968)-0.5 marks 	2
2	Presence in India	5
a)	<p>The bidder with existing software design, /Engineering/Testing facility as on</p> <p>(date of release of NIT/RfP) shall be awarded 5 marks</p>	5
3	CVs (purchaser may take interview of employees whose CV has been submitted and no resource diversion will be allowed unless it is produced that employee has resigned from Organization.	8
a)	<p>Experience minimum 5 years in area of SCADA/ADMS Hardware</p> <p>For submission of CV, 1 mark shall be awarded per CV subject to ceiling of 4 marks that can be obtained in this category.</p>	4
b)	<p>Experience minimum 5 years in area of SCADA/ADMS Software</p> <p>For submission of CV, 1 mark shall be awarded per CV subject to ceiling of 4 marks that can be obtained in this category.</p>	4
	<p>Pre-Demo</p> <p>The Bidder will set up all required equipment at TPNODL site. The Bidder is expected to demonstrate all standard software and hardware necessary for implementation of SCADA/ADMS system by simulation of the SCADA/ADMS under various scenarios. The Bidder is required to set-up their own system/server for demonstration</p>	

4	<p>purpose. The application functionalities demonstrated are to be with data relevant to the business of TPNODL All queries are to be addressed during the demonstration only, and no further opportunities would be presented for subsequent clarifications, if any. Kindly note that the bidders are expected to bring necessary software / hardware required to support such demonstrations. Adherence to the timings is critical and the overall demonstration should not exceed specified hours.</p> <p>Bidder shall avail their own GIS data for demonstration of functionality.</p>	15
----------	---	-----------

S. No.	Description of demonstration	Prospect	Marks	
4.1	<p>GIS data import & interface.</p> <ul style="list-style-type: none"> ▪ Demonstrate on import of Sample Data of GIS into SCADA/ADMS system- 1 marks ▪ Demonstrate Navigation between one lineand GIS displays- 0.25 Marks ▪ Demonstrate alarm status on GIS display-0.25 Marks ▪ Demonstrate status changes on a GIS display- 0.25 Marks ▪ Demonstrate analog value on a GIS display- 0.25 Marks ▪ Demonstrate Supervisory control from a GISdisplay-0.5 Marks ▪ Demonstrate incremental import data validation tools and rule.-1.5 Marks 	Availability of automatic network update and technological address alignments based on network topology	4	
4.2	<p>Interactive Navigation techniques Demonstrate the following:</p> <ul style="list-style-type: none"> ▪ Navigation between one line & GIS baseddisplays -0.25 Marks ▪ Supervisory control techniques from One linedisplays – 0.25 Marks ▪ Interaction of navigation tools (mouse, function keys, toolbars, menus)- 0.5 marks ▪ Panning and zooming -0.25 Marks ▪ Navigation using an overview window-0.25Marks ▪ Differentiation between real time, state estimator, training and study 	Enhance the operation efficiency of operator with interactive scenario	4	

		mode data- 0.50 Marks <ul style="list-style-type: none"> Quick Search mechanism for finding elements, TA, alarms ,tags-2 marks 			
	4.3.	Historical Information Subsystem & real time report generation <ul style="list-style-type: none"> ISR database queries and reports based on UI menu and ISR data to Excel spreadsheet & trend-2 Marks Message log storage and retrieval-0.25marks Disturbance data collection- 0.25 marks Quality indices-0.5 marks Customization flexibility through drag & drop reporting by user/reporting engine- 1 marks 	Availability of real time reporting capability.	4	
	4.4.	ADMS Application <ul style="list-style-type: none"> DPF-1 marks Outage management-1 marks Prediction analysis-1 marks Note:- the purchaser may ask to demonstrate any other functionality also during demonstration		3	

Pice-Bid Evaluation

The Price-Bid evaluation is done only for those bids which are found to be responsive. The net cost quoted will be calculated as simple addition of all the cost mentioned in the price proposal (Annexure - I). The price proposal score shall be calculated with following formula:

Price proposal score = (LP/FP)*50, where LP: Lowest Price Offer; FP: Firm's Price Offer.

5. Payment term: Part-A (SCADA) & Part-B (DMS & OMS)Separately.

Revised SCADA/ADMS PackagePayment Terms						
S. No.	Milestone	Milestone Description	Revised Payment Terms			
			Hardware	Software	EITC	Post commissioning Warranty
1	Milestone 1	Submission and Approval of documents. Completion of Engineering and submission of 10% of CPBG for entire project	10%	5%	5%	Rates will be agreed. P.O. will be placed on Annual basis. Payment will be done on quarterly end of quarter
2	Milestone 2	System Hardware Staging Completed in factory	40%			
3	Milestone 3	Successful completion of FAT and resolution of variances and delivery of Hardware/ Software at Site	30%	45%		
4	Milestone 4	Completion of Site Acceptance Test (SAT) & Operational Acceptance	10%	40%	85%	
5	Milestone 5	Submission of As-Built Drawings and completion of activity Part-A or Part-B	10%	10%	10%	
6	Milestone 6	Training & Spare			100%	
	All expenditures related to Travel, lodging and boarding of TPNODL Representatives, shall be borne by TPNODL. However, Bidder to arrange for local transport and food arrangement within bidder premises.					

6. Order placement

It must be noted that, technically SCADA/ADMS project is one package which will be divided in following parts:

1. **Part A: SCADA to be extended up to 33/11KV and 11KV DT Level.**
2. **Part B : Advance Distribution management System 11KV and below along with Interfaces**

- The above division in parts is only for the purpose of execution and handover of the systems (For warranty purposes) as and when pre- requisites are ready from TPNODL.

P.O will be placed for Part A only and MoM will be signed off for Part

B. Price for Part-B shall be kept valid for 3 years from the date of MoM.

- BA shall be responsible to ensure compatibility of systems supplied in part A with the proposed systems of part B. Bidder to ensure that part B whenever supplied will be compatible to work smoothly as one system with part A.
- TPNODL shall not entertain any request for any updates/upgrades required in part A for making it compatible to work smoothly as one system with part B.
- All the licenses supplied as a part of this package shall be perpetual by nature. All other Technical Aspects will be in line with Tender Document and changes as accepted by TPNODL.

7. Revised Price Bid Format- Attached as Annexure

ANNEXURE I

Schedule for Items – SCADA & ADMS

Pricing Forms

Reference are to sections or tables in the Specification.

1.1	SCADA /ADMS Price Summary for MCC & BCC	SCADA	ADMS	Total
1	Total Hardware Price			
2	Total Software Price			
3	Total Project Implementation Price			
4	Total Recommended Training Courses Price			
5	Total Optional Support Services Price			
6	Total Recommended Spare Parts			
7	Total Any Other			
	Total SCADA/ADMS Price			

- Details of taxes such as GST any other shall be submitted separately along with price proposal.
- All the prices quoted above include 60 months warranty on all hardware/software from the date of project completion.
- The quantities as mentioned above are for evaluation purposes only. Payment shall be made as per actuals.
- The bidder shall quote prices strictly in the above format. Failing to do so, bids are liable to be rejected.
- The bidder must fill each and every column of the above format. *Mentioning “extra/inclusive” in any of the column may lead for rejection of the price bid.*
- No cutting/ overwriting in the prices is permissible.
- The unit price to be indicated in col. No. 4 should be exclusive of taxes & duties which are to be indicated in separate columns meant for the purpose.
- The prices shall be for TPNODL Locations.

ANNEXURE I		
Schedule for Items- Part-A SCADA		
Pricing Forms		
References are to sections or tables in the Specification.		
1.1	SCADA Price Summary for MCC & BCC	Rupees
1	SCADA Hardware Price	
2	SCADA Software Price	
3	Project Implementation Price	
4	Recommended Training Courses Price	
5	Optional Support Services Price	
6	Recommended Spare Parts	
7	Any Other	
	Total SCADA Price	

1.2 Hardware Prices at MCC

1.2.1 SCADA Control Subsystem Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, Readers, etc. for SCADA,FEP,ICCP	As per BoM/Required			
2	Communications Network Equipment	As per BoM/Required			
3	Other Systems Interfaces	As per BoM/Required			
4	Time & Frequency Subsystem	As per BoM/Required			
5	2-Monitor Consoles at MCC	As per BoM/Required			
6	2-Monitor Consoles at other location	As per BoM/Required			
7	80 Inch TV at other location	As per BoM/Required			
8	Video Projection System (MCC)	As per BoM/Required			
9	Expendable Supplies	As per BoM/Required			
10	Miscellaneous Hardware Cost	Required			
Total SCADA Subsystem Hardware Price					

1.2.2 Information Storage and Retrieval Subsystem Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, CDROM, Readers ISR	As per BoM/Required			
2	Tape & media	As per BoM/Required			
3	Any Other				
Total IS&R Hardware Price					

1.2.3 Dispatcher Training Simulator Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, CDROM, Readers	As per BoM/Required			
2	2-Monitor Consoles	As per BoM/Required			
3	Any Other	As Required			
Total DTS Hardware Price					

1.2.4 Development System Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, CDROM, Readers	As per BoM/Required			
2	2-Monitor Consoles	As per BoM/Required			
Total Development Hardware Price					

1.3 Hardware Prices at BCC

1.3.1 SCADA Control Subsystem Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, Readers, etc. for SCADA,FEP,ICCP	As per BoM/Required			
2	Communications Network Equipment	As per BoM/Required			
3	Other Company Computer Systems Interfaces	As per BoM/Required			
4	Time & Frequency Subsystem	As per BoM/Required			
5	2-Monitor Consoles at MCC	As per BoM/Required			
6	2-Monitor Consoles at other location	As per BoM/Required			
7	80 Inch TV at other location	As per BoM/Required			
8	Expendable Supplies	As per BoM/Required			
9	Miscellaneous Hardware Cost	Required			
Total SCADA Subsystem Hardware Price					

1.3.2 Information Storage and Retrieval Subsystem Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, CDROM, Readers ISR	As per BoM/Required			
2	Tape & media	As per BoM/Required			
3	Any Other				
Total IS&R Hardware Price					

1.3.3 Dispatcher Training Simulator Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory,Terminals, CDROM, Readers	As per BoM/Required			
2	2-Monitor Consoles	As per BoM/Required			

3	Any Other	As Required			
Total DTS Hardware Price					

1.3.4 Development System Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, CDROM, Readers	As per BoM/Required			
2	2-Monitor Consoles	As per BoM/Required			
Total Development Hardware Price					

1.4 SCADA Software Prices MCC & BCC

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Base SCADA All software costs (Operating Systems, SCADA/ User Interface, etc.)				
2	NMS & Cyber Security Management Software				
3	Other Systems Interface , list prices individually				
4	Web UI				
5	Video Projection System Interface				
6	IS&R				
7	Development Software				
8	Dispatcher Training Simulator				
9	Third Party Software Licenses				
10	RDBMS Licenses (Specify manufacturer)				
Total SCADA/ADMS Software Price					

1.5 SCADA Project Implementation Cost

S. No.	Description	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Project Management			
2	Testing			
3	Documentation			
4	Shipping			
5	Insurance			

6	Warranty/Guarantee			
7	Installation system including interface			
Project Implementation Price				

1.6 Recommended Training Courses

S. No	Course Name	Price for On-Site Course (Rs)	Price for Course at Bidder's Site (Rs)
1			
2			
3			
	Training Budget Total		

Each of the above quotes shall be independent and shall include all associated documentation, testing, and delivery costs necessary to implement the associated function. If there are economies by selecting certain options together, the Contractor shall identify the groupings and the corresponding group costs in addition to the individual costs.

1.7 Optional Support Services

	Software Post Warranty Maintenance	Rs
1	a. Year 1	
	b. Year 2	
	c. Year 3	
	d. Year 4	
	e. Year 5	
2	Software End of Warranty Upgrade	

- Detailed Price Breakup of the Support Cost quoted above also needs to be submitted. TPNODL reserves the right to place orders for support services for all/ few items as desired on a year to year basis post expiry of warranty period. The prices as quoted above however shall remain valid for all the 5 years.
- PBG for 5% of Contract Value shall be submitted valid for Contract Validity Period plus three month.

NOTE:

- Details of taxes such as GST any other shall be submitted separately along with priceproposal.
- All the prices quoted above include 60 months warranty on all hardware/software from the date of project completion.
- The quantities as mentioned above are for evaluation purposes only. Payment shall be made as per actuals.
- The bidder shall quote prices strictly in the above format. Failing to do so, bids are liable to be rejected.

- The bidder must fill each and every column of the above format. *Mentioning “extra/inclusive” in any of the column may lead for rejection of the price bid.*
- No cutting/ overwriting in the prices is permissible.
- The unit price to be indicated in col. No. 4 should be exclusive of taxes & duties which are to be indicated in separate columns meant for the purpose.
- The prices shall be for TPNODL Locations.

<u>ANNEXURE I</u>		
<u>Schedule for Items- Part-B ADMS (DMS & OMS)</u>		
	Pricing Forms	
	References are to sections or tables in the Specification.	
2.1	ADMS Price Summary for MCC & BCC	Rupees
1	ADMS Hardware Price	
2	ADMS Software Price	
3	Project Implementation Price	
4	Recommended Training Courses Price	
5	Optional Support Services Price	
6	Recommended Spare Parts	
7	Any Other	
	Total SCADA/ADMS Price	

2.2 Hardware Prices at MCC

2.2.1 ADMS Control Subsystem Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, Readers, etc. for ADMS, GIS interface	As per BoM/Required			
2	Other Systems Interfaces	As per BoM/Required			
3	Expendable Supplies	/Required			
4	Miscellaneous Hardware Cost	Required			
Total SCADA/ADMS Subsystem Hardware Price					

2.2.2 Information Storage and Retrieval Subsystem Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, CDROM, Readers ISR	As per BoM/Required			
2	Tape & media	As per BoM/Required			
3	Any Other				
Total IS&R Hardware Price					

2.3 Hardware Prices at BCC

2.3.1 SCADA Control Subsystem Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, Readers, etc. for ADMS, GIS interface	As per BoM/Required			
2	Other Systems Interfaces	As per BoM/Required			
3	Expendable Supplies	Required			
4	Miscellaneous Hardware Cost	Required			
Total ADMS Subsystem Hardware Price					

2.3.2 Information Storage and Retrieval Subsystem Hardware

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Processing Units, Main and Bulk Memory, Terminals, CDROM, Readers ISR	As per BoM/Required			
2	Tape & media	As per BoM/Required			
3	Any Other	Required			
Total IS&R Hardware Price					

2.4 ADMS Software Prices at MCC & BCC

S. No.	Description	QTY	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	ADMS All software costs (Operating Systems, application/ User Interface, etc.)				
2	Other Systems Interface , list prices individually				
3	Web UI				
4	IS&R				
5	Third Party Software Licenses				
6	RDBMS Licenses (Specify manufacturer)				
Total ADMS Software Price					

2.5 ADMS Project Implementation Cost

S. No.	Description	Unit Cost (Rs)	Unit Tax (Rs)	Total Cost (Rs)
1	Project Management			
2	Testing			
3	Documentation			
4	Shipping			
5	Insurance			
6	Warranty/Guarantee			
7	Installation system including interface			
Project Implementation Price			0	

2.6 Recommended Training Courses

S r N o	Course Name	Price for On-Site Course (Rs)	Price for Course at Bidder's Site (Rs)
1			
2			
3			
Training Budget Total		0	

Each of the above quotes shall be independent and shall include all associated documentation, testing, and delivery costs necessary to implement the associated function. If there are economies by selecting certain options together, the Contractor shall identify the groupings and the corresponding group costs in addition to the individual costs.

2.7 Optional Support Services

	Software Post Warranty Maintenance	Rs
1	a. Year 1	
	b. Year 2	
	c. Year 3	
	d. Year 4	
	e. Year 5	
2	Software End of Warranty Upgrade	

- Detailed Price Breakup of the Support Cost quoted above also needs to be submitted. TPNODL reserves the right to place orders for support services for all/ few items as desired on a year to year basis post expiry of warranty period. The prices as quoted above however shall remain valid for all the 5 years.
- PBG for 5% of Contract Value shall be submitted valid for Contract Validity Period plus three month.

Please refer **Annexure-2** of this Corrigendum for the tech. spec. of **80" TV** and **NMS**.

NOTE:

- Details of taxes such as GST any other shall be submitted separately along with priceproposal.
- All the prices quoted above include 60 months warranty on all hardware/software from the date of project completion.
- The quantities as mentioned above are for evaluation purposes only. Payment shall be made as per actuals.
- The bidder shall quote prices strictly in the above format. Failing to do so, bids are liable to be rejected.
- The bidder must fill each and every column of the above format. ***Mentioning "extra/inclusive" in any of the column may lead for rejection of the price bid.***
- No cutting/ overwriting in the prices is permissible.
- The unit price to be indicated in col. No. 4 should be exclusive of taxes & duties which are to be indicated in separate columns meant for the purpose.
- The prices shall be for TPNODL Locations.

.....END of Document

Specification: - 80inch TV

S.No.	Description of the Features	Specification
1	Display Size	80"
2	Light source	LED Backlight
3	Resolution	3840 x 2160 Pixels
4	Brightness (typ)	1800 cd/m2
5	Contrast Ratio(typ)	8000:1 Ratio
6	Response Time (typ)	8ms
7	View angle	160°(H) / 160°(V)
8	Life Time	100,000 Hours
9	View area	1860 (H) x 1046 (V) mm
10	Colors	200 Trillion
11	Interfaces	HDMI IN x 2, Display Port IN x 2, HDMI OUT x 1, VGA IN x 1, PC AUDIO-IN x 1, YPBPR IN(BNC) x 1, LAN IN x 1, AV IN x 1, AV OUT x 1
12	Control	RS232-IN x 1, RS232-OUT x 1
13	Speaker	10W x 2
14	Power	Voltage 100 V ~ 240 V, 50-60 Hz
15		Maximum <500 W
16		Standby ≤0.5 W
17	Environment	Operating Temperature 0°C ~ 45°C
18		Operating Humidity 10% ~ 90% RH Non-Condensing
19	Dimension & Weight	Product Size (W x D x H) 1947 x 60.5 x 1139 mm
20		Net Weight 50 Kg

Network Management System & Cyber Security Specification:-

12.1 Network Management System & Security Information and Event Management (SIEM)

12.1.1 Reliable, Secured and highly available communication infrastructure is the backbone for any real-time system used for remote monitoring and control, and connects geographically spread Sub-Stations with the Central Systems.

12.1.2 The network management software shall be based on the Simple Network Management Protocol (SNMP-Internet RFC 1157) over TCP/IP (CMOT), with additional proxy software extensions as needed to manage SCADA resources.

12.1.3 The NMS software shall provide the following network management capabilities:

- a. Configuration management
- b. Fault management
- c. Performance monitoring

12.1.4 The network management software shall:

Corrigendum -1
Annexure - 2

- a. Maintain performance, resource usage, and error statistics for all of the above interfaces (i.e. servers, workstation consoles, devices, Routers, Layer-3 switches, telephone circuit interface equipment, and all SCADA gateways, routers etc.) and present this information via displays, periodic reports, and on-demand reports. The above information shall be collected and stored at user configurable periodicities i.e. up to 60 minutes. The Network Management System (NMS) shall be capable of storing the above data for a period of two years at periodicity of 5 minutes.
- b. Maintain a graphical display of network connectivity to the remote end routers.
- c. Maintain a graphical display for connectivity and status of servers and peripheral devices for local area network.
- d. Issue alarms when error conditions or resource usage problems occur.
- e. Provide facilities to add and delete addresses and links, control data blocks, and set data transmission and reception parameters.
- f. Provide facilities for path and routing control and queue space control.

12.1.5 The network management platform proposed shall be capable of managing an infrastructure that consists of multi Bidder network elements. The Network management system shall facilitate following activities as per ISO network management model:

- a. Fault Management to recognize, isolate, log and identify fault on network and connected machines, nodes, devices.
- b. Performance Management to monitor system and network performance as specified
- c. Configuration Management to collect information about computers in the system such as processors, memory, peripherals and processes running on computers and configuration aspects of network devices such as configuration file management.

- d. Security Management to protect systems and network from unauthorized access, manage user access, authorizing rights and privileges

The network management software shall be based on the secured version of Simple Network Management Protocol (SNMP) for fault management and performance monitoring platform for long term performance management and trending. The NMS system shall have a simple browser-based user interface to provide all the pertinent information about the system. The user interface software shall be installed on all the Operator as well as programmer workstations. The NMS shall not impact the availability and performance of SCADA system and shall load not more than 3% any host CPU, 1% Network bandwidth and shall have secure communication. The Network management system shall monitor the performance, resource usages and error statistics of all the servers, workstations, routers and LAN devices, SDH multiplexers, etc. including for networks extension

12.1.6 Fault Management

The following functions shall be included:

- a. Network discovery

- b. Topology mapping of network elements
- c. Event handler
- d. Performance data collector and graphic
- e. Management data browser

Each monitored device shall be represented by a graphical element on the management platform's console. Different colours on the graphical elements shall represent the current operational status of network/device. A graphical display for connectivity and status of servers and peripheral devices for local area network shall be provided.

The monitored devices shall be configured to send notifications (SNMP traps) to the NMS. The graphical element representing the device shall change to a different color depending on the severity of the notification received. The notification shall also be placed in a log file. The current version of MIB file of each of the devices shall be loaded on the NMS.

NMS system shall also be capable of handling RMON (Real-time monitoring) alarm and events from the critical network devices. RMON shall be generated in case of environmental factors (power supply, temp etc.) or resource utilization factor (CPU utilization, Bandwidth utilization etc.). Issue alarms when error conditions or resource usage problems occur.

12.1.7 Performance Management

The performance management part of NMS shall maintain performance, resource usage, & error statistics and present this information via displays, periodic reports, and on-demand reports. Including the following:

Utilization (CPU utilization as applicable) for

i. Servers, Workstations, Storage Devices

ii. LAN, Router, Switches

iii. Data Links

b. Bandwidth utilization for Routers/Switches Various interface statistics such as input queue drops, output queue drops, and ignored packets shall be connected from network devices to measure the performance level.

c. Memory utilization, Auxiliary memory I/O utilization, of

i. Servers and Other Machines

ii. Mass Storage Devices

Apart from real-time monitoring, the above information shall be collected and stored at user configurable periodicities i.e. 5 minutes to 60 minutes. The Network Management System (NMS) shall be capable of storing the above data for a period of two years at a periodicity of 5 minutes. The period over which the statistics are gathered shall be adjustable by the user, and the accumulated statistics shall be reset at the start of each period. The statistics shall be available for printout and display after each period and on demand during the period.

12.1.8 The Network Management System & Security Information and Event Management (SIEM) shall have the following major components:

12.1.8.1 Supply and implementation of Hardware along with OS for Network Management System (NMS) with 10 years warranty for Operational Technology Devices

12.1.8.2 Supply and implementation of Software for Network Management System (NMS) with 10 years warranty for Operational Technology Devices

12.1.8.3 Implementation of NMS Software for Operational Technology

12.1.8.4 Supply and implementation of Hardware along with OS for Security Information and Event Management (SIEM) with 10 years warranty for Operational Technology Devices

12.1.8.5 Supply and implementation of Software for Security Information and Event Management (SIEM) with 10 years warranty for Operational Technology Devices

Following are the major specification clauses / requirements which the Bidder has to consider in the offer and also provide compliance through confirmation on each of the below mentioned clauses

12.2. NMS Monitoring Platform Requirements

12.2.1.1 The proposed solution must support a multi - tier deployment architecture with distributed management servers for scalability purposes.

12.2.1.2 The proposed solution should be an integrated, modular and scalable solution from single OEM (i.e. all NMS components from single OEM)

12.2.1.3 The proposed monitoring solution should be configurable with Active Directory for authentication.

12.2.1.4 The proposed fault monitoring solution should provide capability to receive alerts/ alarms from all SNMP and non-SNMP based devices.

12.2.1.5 The proposed solution should be capable to provide hybrid monitoring architecture through support of both agent-based monitoring and agentless monitoring approach.

12.2.1.6 The proposed fault monitoring solution should provide capability to receive alerts/ alarms.

12.2.1.7 The proposed monitoring solution should have capability to configure actions-based rules for set of pre-defined alarms/alerts enabling automation of set tasks e.g. initiating a script.

12.2.1.8 The proposed Solution should support distributed/ remote monitoring by installing additional management servers/ Hubs/ collectors at remote locations for scalability purposes.

12.2.1.9 The Central Monitoring system should be able to install on Windows or Linux Operating system platform

12.2.1.10 The Performance Reporting Portal should be web based with ability to define Accounts and Users for accessibility (RBAC).

12.2.1.11 The proposed monitoring solution should be capable to support distributed alarm handling capability across multiple monitoring domains.

12.2.1.12 The proposed monitoring solution should provide the ability to create custom dashboards for all monitored servers & devices.

12.2.1.13 The proposed monitoring solution should provide ability to monitor and generate alarms for set threshold for pre -defined monitored metrics

12.2.1.14 The proposed solution should provide web-based reporting interface with Top N reports (bidder has to specify the value of N) and functionality to define, customize and schedule analysis reports other than those available OOB. The following reporting dashboards must be available out of the box:

a. Top N Reports

b. Situation to Watch/Critical alarms

c. At a Glance/Bird eye view

d. Trend reports

The proposed solution must provide web-based interface for monitoring configuration

The proposed solution must allow distinct severity levels to be used for notification such as informational, warning, minor, major, and critical – to reflect levels of severity based on true criticality of alarm. The proposed solution must assign default severities to alerts based on observed Best Practices.

The proposed solution must provide dashboards that allow customizing to display historical data and real time info with charts, gauges, and other graphical elements.

12.2.1.15 The proposed solution must provide a portal that aggregates the overall performance information of all the management domains. The portal must be according to the modern web standards and support delivering rich content and flexible UI.

12.2.2 Deployment Features

12.2.2.1 The proposed fault management solution must support a role-based user access model that enables administrators to permit or restrict operator's access to different areas of information based on user security rights assigned.

The system needs to support concurrent multi- user access to the management system, enabling multiple read-write access to different areas of the management domain.

12.2.2.2 The system should have self -registration capabilities built into the product so that it can easily add support for new traps and generate alarms.

12.2.2.3 The proposed infrastructure fault management system must support all existing SNMP versions

12.2.3 Network Discovery & Monitoring

The Network Discovery Solution should provide visibility into network assets through highly accurate and real -time information about network infrastructure.

Network Discovery Solution should provide in - built ability to automatically discover & model layer 2/3 network devices, interfaces along with physical & logical connectivity between them with no / minimal user input and scripting.

Network Discovery module should provide:

a. Accurate automated network discovery and connectivity modelling

b. Visualization of discovered network

c. Active network inventory reporting

Network discovery solution should maintain an accurate representation of network

Network discovery solution should provide web - based reporting capabilities that allows users to quickly design, save & distribute reports, report templates and ad-hoc queries to view network asset information.

The Network Discovery Solution should be designed to provide network discovery and topology visualization for Layer 2 and Layer 3 networks, including IP, Ethernet services, and Multi-protocol label switching (MPLS), IPv4 and IPv6.

Network Discovery Solution should provide broad support to various layer2/3 network technologies such as MPLS IP VPNs, OSPF, BGP, EIGRP, VLAN, IP, HSRP, VRRP, CDP, Ethernet, Layer 2 Ethernet VPNs, IP over ATM.

12.2.4 The proposed system must support multiple types of discovery including the followings:

a. IP range discovery – including built-in support for IPv4/6 addresses

b. Import data - from pre-formatted files (IPs, ranges, strings or ports)

c. Trap-Based Discovery – whenever new devices are added with capability to exclude specific devices based on IP addresses / IP Address range

12.2.5 Proposed solution must be able to discover, model and create topology map of Virtual Port Channeling (vPC) or equivalent enabled devices and its vPC channels along with their individual physical port connections.

12.2.6 The Network Discovery Solution should include Web-based network topology visualization tool. The network visualization GUI should use the network topology to generate graphical maps of the network topology around particular devices and send these maps to Web clients on demand. It should also be possible to create network view based on user defined criteria to view/manage network assets better

12.2.7 The Network Discovery Solution should extend network inventory reports out-of-the-box and the capability to create custom reports through drag & drop or similar ability to create reports.

12.2.8 It shall automatically discover TCP/IP networks, display and build network topologies maps as soon as it is installed. Also, shall correlate and manage events and SNMP traps, monitor network health and gather performance data.

12.2.9 Proposed solution must be able to discover, model and create topology map of vPC (Virtual Port Channeling) or equivalent enabled devices and provide intelligent alarms, Root Cause Analysis (RCA) and Impact Analysis feature.

12.2.10 Proposed solution should provide VSS (Virtual Switching System) device discovery & modelling capabilities and provide advanced alarms and VSS related events correlations and management options.

12.2.11 Proposed solution must provide the virtual switch information / parameters like Chassis information (Chassis ID, Uptime, Role, Core Switch Priority, and Core Switch Preemp), VSL (Virtual Switch Link) Port Statistics, VSL Statistics, VSL connection information & Core Switch configuration.

The Network monitoring tool should support topology-based event correlation and root- cause analytics in turn, to help network operator's work more efficiently by focusing time and attention on root cause events.

12.2.13 Proposed NMS solution must be a native 64-bit or 32-bit application and thereby able to fully utilize the hardware resources (like CPU / RAM address space etc.) and create a highly scalable management platform that can provision for up to many thousands of network device management from a single optimized hardware for various applications. The NMS software must be a true 64-bit/32-bit application and thereby maximize the usage of available server resources and deliver good performance.

12.2.14 The Network monitoring tool should have the capability to create custom views of the network

12.2.15 The network monitoring module should support polling, like high polling frequency for critical devices, and normal frequency for non-critical devices.

12.2.16 In addition to various graphical views, the network monitoring module should also provide tabular views and folder views to quickly navigate the large networks.

The Network monitoring tool should provide network discovery, topology visualization, and root cause analysis for Layer 2 and Layer 3 networks, including IP, Ethernet services, and Multi-protocol label switching (MPLS), IPv4 and IPv6. The proposed solution should be able to support newer network virtualization technologies like SDN.

It shall do a proactive network and systems monitoring. With 24-hour-a-day, 7-day-a-week monitoring, so that administrators can identify and solve network resource problems before they occur, reducing down time.

12.2.17 The tool should capture each networks device's configuration, also the physical and logical connectivity between devices. The tool should model layer 2 and layer 3 network technologies including: Internet Protocol (IP), Ethernet, BGP, EIGRP, VRRP, HSRP, OSPF, VPN, VLAN, ATM and frame relay, MPLS, Layer 2 Ethernet VPNs (including virtual private LAN services and virtual private wire services), Protocol Independent Multicast, and Carrier Ethernet.

12.2.18 Network operators should be able to drill down on specific problems in the event list to locate the alarmed device in the network topology view or show a list of all outstanding alarms on a selected device in the network topology view.

12.2.19 The network monitoring module should support various event correlation.

12.2.20 Network Fault and Performance Monitoring

12.2.20.1 Fault monitoring module should provide Self - Service Dashboard that will allow to integrate event data into business and service views to create dashboards tailored to operations and management needs

12.2.20.2 Fault monitoring module should provide multiple visualization mechanism to view events such as folder view, tabular view. The visualization mechanism should also support ability to group events along with event summary.

12.2.20.3 Fault monitoring module shall receive all the alarms received from the various event sources, unifies them into a common alarm format, correlates them and provide a common graphical user interface for alarm analysis and acknowledgement.

Corrigendum -1
Annexure - 2

12.2.20.4 Fault monitoring module shall be able to process all fault and event related information in real time. It shall be capable of processing in excess of 150 events per second during an event storm allowing visibility of all alarms.

12.2.20.5 Fault monitoring module shall consolidate, and de-duplicate repeated alarms collected from throughout the network and provide a clear, coherent and noise -free list of fault messages.

12.2.20.6 Fault monitoring module should be able to collect events from SNMP and non -SNMP management data sources, RESTAPI, databases, network devices, log files and other utilities. It should allow definition of custom rules for parsing / text manipulation, etc.

12.2.20.7 Fault monitoring module shall be able to filter off repeated alarms of the same device. The start-time, end-time of the alarm shall be indicated.

12.2.20.8 The system shall provide facilities that enable to determine the root cause underlying sets of alarms that exhibit certain patterns.

12.2.20.9 Fault monitoring module should have the capability to detect event rate anomaly – it should detect when it is receiving an unusually low or unusually high rate of events. The event rate should be compared to normal/ baseline and should generate a new event to describe the condition.

12.2.20.10 Fault monitoring module should have the capability to detect when it is subjected to an event storm based on user configured thresholds.

12.2.20.11 Fault monitoring module should have out-of-box capability to perform predictive analysis and generate events that represent predictions for systems that are in danger of an impending threshold violation, and which require attention.

12.2.20.12 Fault monitoring module shall be able to collect alarm events from all the managed Network Element via their respective element management systems or directly, if element management systems are not available for that equipment type.

12.2.20.13 All alarm messages shall be automatically recorded to a database in a form that enables easy and efficient future retrieval, query and analysis.

12.2.20.14 Fault monitoring module shall be able to present alarm history of selected devices for a specific period upon request.

12.2.20.15 All alarm/event messages shall be automatically time and date-stamped by the fault monitoring module as well as related information on (e.g. Alarm receive-time start-time, clear-time, acknowledge-time etc.) shall be logged.

12.2.20.16 Fault monitoring module should help to prioritize responses to alerts, manage escalation procedures using automated response policies.

12.2.20.17 Fault monitoring module should enable operators to define policies for handling incoming events through a graphical user interface

12.2.20.18 Fault monitoring module should be able to mark device / infrastructure under maintenance mode. It should have a GUI to define maintenance schedule.

Corrigendum -1
Annexure - 2

12.2.20.19 Fault monitoring module shall provide a complete view of the health of the entire distributed environment from a centralized NMS console. It shall be able to provide decentralized management through multiple consoles with centralized escalation, reporting and control if required.

12.2.20.20 Fault monitoring module shall capture all the events that are generated across the multi Bidder network infrastructure, correlate them and automate suitable actions as defined.

12.2.20.21 Fault monitoring module shall trigger automated actions based on incoming events / traps through predefined message -actions definable in event management. It should integrate with proposed trouble ticketing system for auto ticket logging (to be provided by bidder).

12.2.20.22 The Solution must be capable of monitoring the availability, health, and performance of core networking devices including but not limited to CPU, memory, temperature, interface bandwidth utilization.

12.2.20.23 The solution should be capable of monitoring network delay/latency and delay variation

12.2.20.24 The solution should be capable of monitoring packet loss, Packet QOS, Packet Errors on one or more ports

12.2.20.25 The system should provide discovery of heterogeneous physical network devices like Layer-2 & Layer-3 switches, Routers and other IP devices and do mapping of LAN & WAN connectivity with granular visibility up to individual ports level.

12.2.20.26 As fault monitoring is one of the most critical components, it should have inbuilt failover/redundancy mechanism right from the processing engine down to collection layer.

12.2.20.27 Fault monitoring module shall have easy -to-use graphical rules builder to help build and adapt business rules and automations quickly and easily. Rules shall be created using a GUI, which shall also provide a convenient environment for testing rules before they are put into production.

12.2.20.28 The tool should allow the operator to alter the monitoring policies that can be fine -tuned for a group of devices (each policy identifies the attributes of the device to poll to better understand the health of a device). It should also provide option to define a set of polling policies that adapt to changing network conditions.

12.2.20.29 Consolidated operations management system shall provide extensive library of integration adapters across various operations management systems, third party data & event sources. The integration adapters library should provide wide coverage:

a. Third party monitoring, event management, configuration management, business service management, databases, help desk/problem & incident management systems

b. Databases (like Oracle, DB2, Sybase, Informix, MySQL, SQL, ODBC etc.)

c. Event/Message Bus (like JMS, TIBCO, Vitria)

d. Standard Interfaces (XML, SNMP, LDAP, CORBA)

e. Custom applications (via command line, TCP/IP Sockets, flat-files, instant messaging, email)

12.3 Fault/Alarm Management

Corrigendum -1
Annexure - 2

12.3.1 System should provide events & log analytics capability to analyze alarms via Dashboards, Custom Widgets etc.

12.3.2 The event / log analytics should leverage real - time alarm and alert analytics, combined with broader historic data analytics. It should provide event search and historical analysis in a single solution.

12.4 Advanced search and text analytics technology to search large amounts of: Alarms, Tickets, syslog, Logs data for quick troubleshooting.

12.4.1 It should provide data analytics, correlation capabilities based on ticket, alarms etc.

12.4.2 Search logs using configured and discovered patterns such as traces, class and event IDs, and error codes to quickly identify and repair issues.

12.4.3 Quickly visualize application error type distribution across thousands of log records.

12.4.4 It should provide the ability of keyword searches and should provide dynamic drilldown functions that allows to go deeper into the event data for detailed information.

12.4.5 The solution should provide Analytics capability to identify exclusive patterns within the monitored environment. It should use statistical analysis of historical event data to determine the seasonality of events, such as when, and how frequently events occur. The results should be presented in report and graphical format.

12.4.6 Analytics should be able to show time distributions of events and investigate pe ask so that user can trace the root cause of reoccurring seasonal events

12.4.7 Analytics should be able to better align thresholds to seasonal peaks which further reduces events.

12.4.8 Analytics should be able to detect events that are reoccurring regularly e.g. at a particular "hour of day", "day of week" and "day of month" etc.

12.4.9 Solution should be able to generate alerts / alarms on pre-configured conditions.

12.4.10 Solution should integrate with LDAP / AD to provide Role Based Access Control so as to limit the exposure of logs based on user/ Operator roles.

12.4.11 System should be able to determine related events from the event archive and determine which alarms have statistical tendency to occur together and output the results on a scheduled basis as event groups.

12.4.12 The system should provide a related events dashboard which outputs the result of the analytics on a regular basis.

12.4.13 The dashboard should provide relative time differences between occurrences of related events so as to provide the operator a better understanding of the sequence of events leading to a service outage.

12.4.14 The solution should provide the ability to define rules that act on the event data and show a single parent event from the event group, with all other events in the group as children which in turn should reduce the number of events that are presented to operators.

12.4.15 System should provide Scope Based Event Grouping capability that allows to group alarms based on a defined scope.

12.4.16 The Scope should be defined as a Local or an Area scope. Local Scope could be based on one Device. Area scope could be based on the Links connecting two or more Devices.

12.4.17 The Scope should be defined in conjunction with a Time Window for grouping of alarms

12.4.18 The scoped Grouping visualization should be able to show the grouped alarms in parent child form.

12.5 Network Configuration Management

12.5.1 The proposed solution must have an in -built capability to carry out configuration management without the use of any external software to reduce integration efforts and increase ease of deployment.

12.5.2 The system should support secure device configuration capture and upload and thereby detect inconsistent “running”, “startup” or “reference” configurations and alert the administrators.

12.5.3 The proposed system should be able to administer configuration changes to network elements by providing toolkits to automate the following administrative tasks of effecting configuration changes to network elements: * Capture running configuration * Capture startup configuration

12.5.4 The proposed fault management solution must be able to perform real -time or scheduled capture of device configurations

12.5.5 The proposed fault management solution must be able to store historical device configurations captured in the database and thereby enable comparison of current device configuration against a previously captured configuration as well as compare the current configuration against any user-defined standard baseline configuration policy.

12.5.6 The proposed solution must support an approval workflow for network configuration management.

12.5.7 The Network Change & configuration management tool should provide the ability of data-driven templates that can be utilized to automate tasks that helps improve network integrity by enforcing configuration policies for regulatory mandates, security directives and engineering standards

12.5.8 Proposed solution should support multi Bidder network device configuration.

12.5.9 The Network configuration management tool should provide role -based access control that helps ensure that only approved users can access specific devices and perform upgrades.

12.5.10 The Network Change & configuration management tool should provide terminal that enable Telnet or SSH terminal access to devices. The tool should provide capability of session logging of all keystrokes and device responses and automatic backup of device activity after the session is terminated.

12.5.11 Solution should record / store the following data. Changes made to a device
a. Device change causes breach of policy

- b. Event collected for changes and breaches
- c. Root cause of faults identified
- d. Remediation action taken
- e. Root cause of breach fixed
- f. Re-evaluation of change breach
- g. What was changed on the device
- h. Why was the change made
- i. When was the change made

12.5.12 Auditing: Recording every access to a device including not only scripted and automated access, but a full keystroke log. Who made what change, the reason for the change and associated ticket number must be captured. Out-of-band changes must be detected.

The network change & configuration management key features should include the following:

- a. Enables accurate and rapid configuration changes
- b. Full Device Configuration Backup with Versioning
- c. Full Configuration Search & Enable configuration comparisons across versions & devices too provide any Version to Version Difference
- d. Offer direct command-line access to the device that is logged and auditable. Also permission setup should be possible, for example who can execute this function and which part of the network they can access.
- e. Enforce change control process based on role and user access
- f. Provide out-of-the-box and customizable reports
- g. Provide back-up and restore of device configurations.

12.5.13 Should have compliance reporting that shows whether configuration comply with specific templates of configurations e.g. do they have the right ACL's, have they been configured with the correct service configurations.

12.6 Network Traffic Analysis

12.6.1 Proposed Network Traffic Monitoring should be a flow-based network traffic performance monitoring system.

12.6.2 It should provide a comprehensive and scalable visibility on network traffic with visualization and reporting of network performance data for complex, multi Bidder, multi - technology networks with increased visibility into total network performance.

12.6.3 It should help to perform analysis and visualization of network traffic for preventing network hogs and abuse.

12.6.4 Proposed solution should enable to effectively identify users, applications, interfaces, and, protocols that are traversing the network, which is consuming the most bandwidth in near real - time, through analysis and extensive visualization of data

12.6.5 It should help discover and analyze network traffic behavior patterns (on real time basis) such as:

- a. Where bandwidth is used

b. Who is using it

c. How it is being used

12.6.6 Proposed solution should provide visibility and help to have improved control over end-to-end resource usage for hosts, servers, applications, protocols, interfaces.

12.6.7 Proposed solution should dynamically generate detailed network traffic reports from flow - information streams such as NetFlow, IPFIX, J -Flow, CFlow, SFlow and Net Stream.

12.6.8 Proposed solution should enable IT Network Operator to detect interface traffic threshold violations through identifying users, applications, interfaces, and protocols that are traversing the network, and identify the probable cause of the alert with the help of a single UI and consistent user experience. It should send alerts for threshold violations.

12.6.9 Proposed solution should provide built in DNS name resolution and should perform DNS forward and reverse resolutions to manage the Flow interfaces and resolve DNS names for reporting.

12.6.10 Proposed solution should be able to monitor minimum 25,000 flow records per second that are traversing the system.

12.6.11 It should provide traffic overview that delivers real-time, end-to-end, and scalable network traffic visualization with customizable features that meet our business requirements. It should also provide details of applications, hosts, and conversations consuming WAN bandwidth to isolate and resolve problems

12.6.12 Analytics component should perform flow session categorization and aggregation.

12.6.13 The proposed system must provide early warning of tunneling, rogue user behavior, host mis-configuration and other performance threats

12.6.14 The proposed system must comprise of baseline views and anomaly detection capabilities to identify abnormal traffic and analyze trends in applications, hosts, and conversations per QoS policy

12.6.15 The user interface should provide access to standard dashboards, which are pre-generated traffic reports for the fixed time periods such as Last Hour, Last Day, Last Week, Last Month etc.

12.6.16 The main grouping keys for the Network Traffic Overview dashboard should be definable as below specified grouping key:

- a. Protocol
- b. Source
- c. Conversation
- d. Application
- e. Destination

12.6.17 It should provide the ability such that a new interface should automatically get added after receiving the NetFlow data from the exporter.

12.6.18 It should provide rich and adaptive features to display real time or near real -time dashboards, for quick analysis of data. The visualization features and capabilities should be as follows:

Near real-time flow monitoring

- a. Should analyze the network traffic patterns
- b. Should detect which applications are hogging maximum bandwidth.
- c. Should provide simplified reports on detailed traffic data over a specified time period.
- d. Ready to use traffic overview and traffic details dashboards
- e. Should provide minimum ten network topology level dashboards for top 10 talkers
- f. Should provide the drill down dashboards to device level or interface level for more details on flow
- g. Bandwidth consumption by applications
- h. Should be able to detect top applications usage of bandwidth.
- i. Should be able to monitor their ports
- j. Threshold values and alerting
- k. Should provide traceable alerts that are sent instantly when an interface crosses the configured threshold value.
- l. Should provide help to drill-down to the interface that exceeds its threshold value.
- m. Historical Data
- n. Should provide configurable flow data from a specific date or time to view activity and problems in the captured data. Flow data should be available from Following widgets at minimum should be integrated in Traffic Overview dashboard

12.6.19 Following widgets at minimum should be integrated in Traffic Overview dashboard:

- a. Top Interfaces
- b. Top Ingress Interfaces
- c. Top Egress Interfaces
- d. Top Applications
- e. Top Protocols
- f. Top Conversations
- g. Top Sources

- h. Top Destinations
- i. It should provide the ability to view the traffic details of a particular entity both at Network and Interface levels.

12.7 Server & Database Management

The solution should have the following features:

- a. Scalable and resilient monitoring across the infrastructure domain

- b. Hybrid monitoring architecture through support of both agent-based monitoring an agentless monitoring approach

- c. Single solution for visibility and intelligently managing applications & application infrastructure in classic, virtualized, cloud and hybrid environments

- d. Monitoring all critical components at server, OS, application & database level – such as server resources, virtualization technologies, applications, web server and databases etc. Should be able

to monitor various industry - wide popularly used Operating Systems & Virtual Environment, Databases & Web Servers.

12.7.1 Web dashboards should be available to identify, isolate, and diagnose availability, performance, and capacity issues. Web dashboard should be role-based.

12.7.2 User Interface for improved visibility into the application environment, for quicker problem isolation and root cause identification, and is viewable on smart devices.

12.7.3 It should provide capability to build unique monitoring solution agents for home grown or custom applications. It should facilitate creation of custom agent using a wizard along with the capability to integrate with web base portal so as to visualize and collect real time and historical data from custom agents.

12.7.4 It should provide Adaptive baselining capability which allows the system to learn the normal range of values for a given metric based on its history.

12.7.5 It should provide capability of fixed and Dynamic thresholds (Without restart) which allows thresholds to be set from learned behavior based on the history of the specific resource or metric. These thresholds can vary based on the behavior of the relevant metric and can change by hour, day or another appropriate time period.

12.7.6 It should provide predictive alerting capability when a dynamic threshold is crossed so as to alert administrator that something abnormal is occurring and should be reviewed. At this

point an outage has not occurred or the relevant performance metric is outside its normal bounds and an outage or degradation could occur.

12.7.7 It should provide linear Trending capabilities to allow users to view directional trends of performance metrics. It should also provide capabilities to set policies to kick off predictive alerts when it looks like a trend will exceed a threshold within a given timeframe

12.7.8 It should monitor physical resources that have been abstracted and pooled by a virtualization hypervisor for sharing among virtual machines and clusters.

12.7.9 It should provide health dashboards for rapid assessment of infrastructure health & performance.

12.7.10 Systems Management should enable the selection of Key Operational Metrics that provide the best indication of operational performance and capacity.

12.7.11 The Monitoring tool should support monitoring of standard RDBMs like Oracle, MS-SQL, Sybase, Informix and DB2.

12.7.12 The Database monitoring should seamlessly integrate with the same (NMS) Dashboard/Portal and provide integration with the central event console.

12.7.13 It should provide monitors with pre -set thresholds and automatic corrective actions for DB2, Oracle, MS-SQL, Informix and Sybase databases.

12.7.14 The solution should be able to monitor servers using WMI and SSH.

12.7.15 It should enable users to manage multiple databases across different platforms from a central console with single product and a consistent architecture.

Corrigendum -1
Annexure - 2

12.7.16 It should support a central repository for historical and real -time reporting that enables trend analysis data to better plan the resource utilization.

12.7.17 It should easily integrate into an end -to-end enterprise management solution.

12.7.18 All data captured by the monitors should be delivered through an intuitive user interface and made available through historical and real -time reports.

12.7.19 It should provide the ability to define custom situations, thresholds, and tasks that can be defined, by the DBA, based on the best practices.

12.7.20 It should facilitate administrators to view the database and system environment with a single Web-accessible interface and perform administrative tasks from any location.

12.7.21 The tool should provide the ability to easily collect and analyze specific information, including information on:

- a. Buffer pools
- b. Databases
- c. Server key events
- d. Tablespaces
- e. Database Usage
- f. Database State
- g. Errors

The monitoring tool should provide pre -defined views and enable the admin to easily define new workspaces with metric collections based on their own best practices. These workspaces should be reflected in the enterprise portal.

The Solution should Provide query's Response Time for Monitoring Custom Queries

Database Space Monitoring for both file group and transaction log (Warning threshold, Critical threshold as well as file group/log full)

The solution must support Database Health and Settings - Check database status (offline, suspect), Check database options (auto grow, auto shrink, auto close etc.)

The solution should support auto-discovery of database instances.

The solution should support the creation and management of reusable test templates that contain a specific pre -defined set of database checkpoints/measurements.

12.8 Application Performance Management

12.8.1 The bidder should provide an integrated solution for monitoring across a broad set of heterogeneous application infrastructures. It should provide one tool for monitoring, viewing, analyzing, forecasting and managing applications running on Physical as well as Virtual Environments across the enterprise consolidating critical application data in one easy-to-use Web Based Portal

12.8.2 It should help manage business applications by proactively monitoring essential system resources, detecting bottlenecks and potential problems and automatically responding to events.

12.8.3 It should be built on the highly scalable distributed architecture and provide efficient, centralized management of distributed and Web-based systems.

Corrigendum -1
Annexure - 2

12.8.4 The proposed solution should support and be installable on industry standard RDBMS like Oracle/ MS-SQL/ DB2/ Sybase/ Informix etc. and licenses of RDBMS should be part of the proposed solution.

12.8.5 The proposed system must be able to detect user impacting defects and anomalies and reports them in real -time:

a. Slow Response Time

b. Fast Response time

c. Low Throughput

d. Partial Response

e. Missing component within transaction

12.8.6 The proposed system must be able to pro - actively determine exactly which real users were impacted by transaction defects, their location and status

12.8.7 The proposed system must provide the ability to detect and alert when the application is not available

12.8.8 Solution shall be able to monitor customer transaction by end-user name, and thus able to understand exactly which customers were impacted, their location, type of browser used etc.

12.8.9 Solution must be able to extract data from Http request header and body to assist in identifying transactions or extract user, session and other parameters.

12.8.10 It should provide reporting capability so as to access critical information for better and more proactive business decisions

12.8.11 The proposed solution must determine if the root cause of performance issues is inside the monitored application, in connected back -end systems or at the network layer from a single console view.

12.8.12 The proposed solution must proactively monitor 100% of real user transactions; detect failed transactions; gather evidence necessary for triage and diagnosis of problems that affect user experiences and prevent completion of critical business processes.

12.8.13 The proposed solution must provide deeper end-to-end transaction visibility by monitoring at a transactional level and without deploying any software at end user desktop.

12.8.14 It should provide integrated performance and capacity management to monitor, alert and report on future capacity bottlenecks

12.8.15 It should provide end-to-end monitoring for:

a. Operating systems including AIX, Microsoft Windows, Linux, Solaris, HP-UX, AS/400, i5/OS etc.

b. Virtualization including all industry standard layers such as VMWARE, Hyper-V, PowerVM, RHEV, OVM etc.

c. Database servers including DB2, Oracle, MS- SQL, MYSQL, Sybase, Informix and unstructured databases etc.

Corrigendum -1
Annexure - 2

d. Web resources including web servers (such as IIS, Apache, etc.) application servers, Java™ Platform and Enterprise Edition (Java EE) applications, J2EE platforms, WebSphere, WebLogic, SAP NetWeaver

12.8.16 It should have simplified installation and configuration. It should be possible to deploy and update the agents remotely.

12.8.17 The agent should provide a store and forward capability, it should be recoverable and can continue to function after the network is restored.

12.8.18 It should offer an easy, consistent way to monitor and manage key distributed resources through a centralized management interface. Monitoring parameters should be able to set and updated for an entire group and applied to distributed resources in a single action.

12.8.19 The tool should provide facility for benchmarking server performance and alerting on abnormal behavior rather than relying on just fixed thresholds.

12.8.20 The proposed solution should detect performance hotspots in the applications.

12.8.21 The proposed solution must provide a single view that shows entire end-to-end real user transaction and breaks down times spent within the application components, SQL statements, backend systems and external 3rd party systems.

12.8.22 The proposed solution must be able to provide root-cause probability graphs for performance problems showing the most probable root-cause area within application infrastructure.

12.8.23 It should provide role -based, real-time views of monitoring data, allowing problems to be viewed in the context of the application and historical context which in turn enables quick drill-down to determine the source of a problem. It should provide side-by-side real time and historical views, expert advice and automated best practice s in response to incidents.

12.8.24 It should provide role -based, real-time views of monitoring data, allowing problems to be viewed in the context of the application and historical context which in turn enables quick drill-down to determine the source of a problem.

12.8.25 The tool should facilitate development of monitoring agents for home grown or custom applications. It should be able to create a custom agent using a Wizard or equivalent methodology

12.8.26 It should enable proactive management of transactions, identifying bottlenecks and other potential problems for standard applications.

12.8.27 It should support synchronous and asynchronous message tracking

12.8.28 It should support an agent based as well as agent-less Web response monitoring component that allow us to adopt an end user's perspective when measuring transaction performance. The software should enable us to capture performance data from real Web-based transactions.

12.8.29 It should deliver unparalleled support across distributed infrastructure

12.8.30 It should proactively recognize and isolate transaction performance bottlenecks in complex composite applications along with intelligent alerts based on user defined thresholds

Corrigendum -1
Annexure - 2

12.8.31 It should deliver response time monitoring of both real-user and synthetic transactions

12.8.32 It should provide the ability to measure the performance of HTTP and HTTPS requests including performance information for objects embedded in a Webpage. These measurements should include a number of dimensions, including total response time, client time, network time, server time, load time and resolve time.

12.8.33 It should provide application console to see status summary and trend analysis information across managed resources and to perform problem determination

12.8.34 It should collect data in real time at a configurable, constant interval.

12.8.35 It should provide accurate status directly from the monitoring agent situations.

12.8.36 It should provide the ability to fully customize the reports.

12.8.37 It should show the overall status of monitored Internet services by host, user profile, and service type.

12.8.38 It should be capable of monitoring all the following Internal services:

- a. DHCP
- b. ICMP
- c. RADIUS
- d. SNMP
- e. Dial
- f. IMAP4
- g. RPING
- h. SOAP
- i. DNS
- j. LDAP
- k. RTSP
- l. TCP Port
- m. FTP
- n. NNTP
- o. SAA
- p. TFTP
- q. HTTP
- r. NTP
- s. SIP
- t. WMS
- u. HTTPS
- v. POP3

SMTP

x. And other standard IT & OT services and protocols

12.9 Report/Service Log

12.9.1 It should provide the ability to view a list of related records and view the work and communication logs for all related records on one screen, on the global record.

12.9.2 Solution should be able to deliver the business Intelligence reports.

12.10 Incident Logs/Reporting

12.10.1 It should provide the ability to create an incident record to document a deviation from an expected standard of operation.

12.10.2 The proposed solution shall provide classification to differentiate the incident via multiple levels/tiers of categorization, priority levels, severity levels and impact levels.

12.10.3 The proposed solution shall provide the ability to associate each incident with multiple activity log entries via manual update or automated updates from other security or infrastructure management tools.

12.10.4 The proposed solution should provide various escalation policies for multiple escalation levels and notification to different personnel via e -mail

12.10.5 The proposed solution shall provide status of registered incidents to end-users over email and through web

12.10.6 It should provide the ability to view a list of related records and view the work and communication logs for all related records on one screen, on the global record.

12.10.7 It should provide the ability to identify a global incident which is the root cause of many other issues or that is something affecting many users.

12.11 Change Management

12.11.1 The proposed solution shall support version control for Configuration Items.

12.12 Reporting / Dashboard

12.12.1 The proposed solution shall provide commonly used standard out of the box Reports.

12.12.2 The Proposed solution should provide native capability to deliver Business reports

Reporting tool should provide the ability to send reports via email with interactive features like clickable charts, sorting, radio button, tabs, cascading lists, checkbox filtering etc. It should provide the output in PDF, Excel and CSV formats.

12.12.4 The proposed solution should provide a web - based reporting solution that provides role - based access to existing report content, creation of new reports.

12.12.5 Based on the style of report that is selected, it should provide the facility so that the summaries can be displayed at the header or the group level. The summaries should provide high level overviews including counts, averages, minimum values, maximum values etc.

12.12.6 Reporting tool should provide reports enabling historical views of availability, utilization, performance and other key metrics.

12.12.7 The solution should provide flexible report formats.

12.13 Collaboration and Mobility

12.13.1 The Proposed Solution should provide the ability to broadcast message to all users.

12.14 Bidder to consider Redundant Centralized NMS with Hardware, Networking Accessories such as Network Switch, Cables, LIU's, Patch cords, etc. and NMS Software license for 1000 Nodes. The NMS Hardware + Software + OS shall be housed in Pre-wired server Panel (size 42U), rack mounted server systems, KVM switch, Sliding Monitor, Keyboard and Mouse along with other accessories

Corrigendum -1
Annexure - 2

12.15 Testing & Configuration of Network Management System with the facility to monitor the network, consolidate the device logs and provide system wide user authentication.

12.16 Configuration changes in installed existing Automation WAN Network across Purchaser Network for seamlessly accommodating the new supplied system.

12.17 Bidder to consider the Time synchronization of the Network equipment with Purchaser's substation GPS receiver on SNTP. If the same is not supported by the proposed system, the bidder shall consider the alternate solution for time synchronization of the communication network components

----- END of Document -----