No. 13-04-10-PMU-BOR/2013/1651

BOARD OF REVENUE SINDH
PROJECT MANAGEMENT UNIT

Karachi Dated: 02 -07-2013

To,

The Manager Enforcement-II,
Sindh Public Procurement Authority,
Karachi

SUBJECT: "ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND ICT INFRASTRUCTURE DEVELOPMENT OF 27 PROPERTY RECORDS FACILITATION CENTERS FOR SINDH" (NIT REF NO: INF-KRY NO:3809/12 DATED: 29.09.2012)

I am directed to request you to refer to your letter No. Dir(A&F)M05/SPPRA/28-1/12-13/6191, dated: 24-06-2013 on the subject cited above and to state that letter No. Dir(A&F)M05/SPPRA/28-1/12-13/7163, dated: 03-01-2013 of SPPRA was received in this PMU wherein observations cited at para 2(i), (ii) & (iii) of the instant letter were only received for clarifications at this end without any clear or implied instruction for withholding the procurement process. Contrary to this the Bid Evaluation Report forwarded to SPPRA for the subject tender was hoisted on the Authority's website at Serial No. 13985, with report ID No. 1301/2012 and SPPRA ID No. 9599/2012 on 31-12-2012 leading this department to proceed ahead with award of contract in favour of the best evaluated bidder. Detailed report along with relevant documents on the observations is given here as under:

S.No.	Observation	Reply
(i)	Tender was invited on the basis of Single Stage Two Envelope Procedure, whereas Bid Evaluation Report envisages Method of Procurement as QCBS (which is only used for selection of Consultants)	It is clarified that Single Stage Two Envelope Procedure was adopted in the bidding process and the method of procurement was erroneously written as QCBS in the Bid Evaluation Report instead of Single Stage Two Envelope Procedure which was followed in letter & spirit. The reply upon the observation with corrected Bid Evaluation Report was prepared but could not be forwarded for want of signature of one of the members of the Procurement Committee. The same duly signed by all members is enclosed herewith.

(ii)	Estimated cost was not mentioned in the Bid Evaluation Report	Kind attention on the observation is invited to the standard format of Bid Evaluation Report which in Column 5 requires comparison with estimated cost. Hence, the bid was only recorded as higher than the estimated cost. However, it is again pointed out that the correct Bid Evaluation Report containing exact figures of the estimated cost was prepared and copy of the same is enclosed herewith.
(iii)	Technical Evaluation Report is not provided by Procuring Agency	It may be stated that the technical evaluation report was prepared and signed by all committee members well in time. Copy of the same is enclosed.
(iv)	As per corrigendum of NIT Published on 13-11-2012 in daily "Dawn" the opening date of tenders was rescheduled on 19-11-2012, whereas the Bid Evaluation Report shows the opening date as 07-12-2012 which is against Rule 17(3) and Rule 21(2) of SPP Rules 2010. Procuring agency has not clarified this anomaly in opening dates till to date.	It may be clarified that the opening date of tender was scheduled as 19-11-2012 for which pre-bid meeting was also held on 14-11-2012 as per rules which was attended by 20 interested bidders as shown in attendance sheet attached herewith. A thorough discussion was made in the meeting and it was upon eager request of all interested bidders in oral and writing (both) that the date for opening of bid was extended up to 07-12-2012 with the approval of the competent authority (copy of minutes of meeting is also enclosed for ready reference). Accordingly therefore all the interested bidders were intimated through written correspondence and such notice was also pasted on notice board as well as website of this PMU.
(v)	90 Days validity period of NIT in terms of Rule 38(1) expired on 17-02-2013 and extension in validity period (if any) in terms of Rule 38(4) also expired on 17-03-2013. However, Procuring Agency has not furnished Contract Agreement, Letter of Award of Contract, BOQ & Contract Evaluation Form in terms of Rule 50 of SPP Rules 2010, therefore, it is not clear if Procuring Agency has complied Rule 49 of SPP Rules 2010 (i.e. award of contract within validity period)	It may be clarified that the Bid Evaluation Report giving reasons for acceptance as well as rejection of bids was forwarded to SPPRA and was also hoisted on website of this PMU in terms of Rule 45 of SPP Rules 2010. Intimation of the results of Bid Evaluation Report was also given to all the bidders. The evaluation report was hoisted on SPPRA website on 31-12-2012. Besides further, no bidder came forward to ask for non-acceptance of his bid or for a debriefing meeting under Rule 51 of SPP Rules 2010 within the prescribed period and even till date. Furthermore, no instruction for withholding the procurement process was received from any agency and hence after approval of the competent authority the bid was accepted under Rule 48 of SPP Rules 2010 by letter dated: 10-01-2013. The contract agreement was further forwarded to the Law Department Government of Sindh for vetting & hence after observance of all required formalities and with the approval of competent authority the contract agreement was signed with the best evaluated bidder on 10-01-2013, i.e. within the bid validity period of 90 days.

It would not be out of place to mention here that the Honorable Supreme Court of Pakistan is periodically monitoring the progress of Land Records Computerization Program of all the Provinces in Human Rights Case No. 3193-P of 2009 wherein Honorable Court has passed directions for speedy computerization of Revenue Record. Noteworthy further to state that all relevant details have been submitted to the Honorable Court on each date of hearing and the Honorable Court has time and again appreciated the progress made by the Sindh Province towards computerization of land record as may be observed from the court orders attached herewith.

The detailed account of facts and events placed herein above may reveal that a transparent procurement process was adopted by attracting the maximum number of interested bidders who were given clear understanding of the assignment as per the B.O.Q developed by the Software Consultant and were also provided ample time to participate in the bidding process.

This is for your information and necessary action at your end.

DEPUTY DIRECTOR (F&A)
LARMIS, PMU
BOARD OF REVENUE, SINDH

C.C. To:-

- The Senior Member, Board of Revenue, Sindh
- The Member R&S, Board of Revenue, Sindh
- The Project Director PMU, Board of Revenue, Sindh
- Office Record

DEPUTY DIRECTOR (F&A)
LARMIS, PMU
BOARD OF REVENUE, SINDH

Bid Evaluation Report

1. **Name of Procuring Agency:** Project Management Unit, Reforms Wing & Special Cell, Board of Revenue, Sindh
2. **Tender Reference No:** INF-KRY-3709/12
3. **Tender Description/Name of work/item:** Establishment of Data Center, Disaster Recovery Center and ICT Infrastructure of 27 Facilitation Centers in Sindh under the scheme of LARMIS
4. **Method of Procurement:** Single Stage Two Envelope Procedure
5. **Tender Published**: Daily Dawn dated 29 September, 2012
6. **Total Bid documents Sold;** 20 (Twenty)
7. **Total Bids Received:** 03 (Three)
8. **Technical Bid Opening date**: 07-12-2012
9. **No. of Bids technically qualified:** 02 (Two)
10. **Bid(s) Rejected:** 01 (One)
11. **Financial Bid Opening date:** 21-12-2012
12. **Bid Evaluation Report:**

S No	*Name of Firm or Bidder*	*Cost offered by the Bidder*	*Ranking in terms of cost*	*Comparison with Estimated cost*	*Reasons for acceptance/ rejection*	*Remarks*
0	1	2	3	4	5	6
1.	M/s. Zehra Communications	**Rs. 596,325,478** (Five Hundred and Ninety Six Million, Three Hundred and Twenty Five Thousand, Four Hundred Seventy Eight Only)	1st	590,000,000 Higher	In the light of consolidated score, the Procurement Committee found the bidder as the first best evaluated lowest bid and recommended for award of contract.	Procurement Committee recommended the bidder for final award of contract in its meeting dated: 21-12-2012.
2.	M/s. Jaffer Brothers	**Rs. 646,383,283** (Six Hundred and Forty Six million, Three Hundred and Eighty Three thousand, Two Hundred and Eighty Three Only)	2nd	590,000,000 Higher	The firm was technically qualified but its bid was found higher. Moreover, the bid security was also not attached with financial proposal.	The Committee rejected the financial bid of the firm due to lack of bid security.

(Athar Hussain Baloch)
Member
Representative of IT Deptt

(Mumtaz Hussain Gopang)
Member
Representative of Finance Deptt:

(Rahim Bux Bugti)
Member
Deputy Director (F&A),
LARMIS PMU

(Zulfiqar Ali Nizamani)
Member/Project Director-PMU
Board of Revenue Sindh

(Zulfiqar Ali Shah)
Chairman/Member (R&S)
Board of Revenue Sindh

EVALUATION OF TECHNICAL BID OF BIDDERS FOR "ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND INFRANSTRUCTURE DEVELOPMENT OF 27 FACILITATION CENTERS IN SINDH PROCUREMENT COMMITTEE ON 21-12-2012

S#	Criteria		Marks Obtained		
A	Company Profile	Max Marks	M/s. Zehra Communications	M/s. Jaffer Brothers	M/s. Commtel
1	Member Reforms Wing & Special Cell, Board of Revenue, Sindh	1000	767	710	374
2	Project Director PMU, Board of Revenue, Sindh	1000	753	708	374
3	Deputy Secretary Development II, Finance Department, Govt. of Sindh	1000	767	710	374
4	Project Director, IT Department, Govt. of Sindh	1000	790	720	374
5	Deputy Director F&A, LARMIS, PMU	1000	757	701	374
	Total	5000	3834	3549	1870
	Consolidated Score	1000	767	710	374
	Minimum score required to be short-listed is: 70% Marks				

(Rahim Bux Bugti)
Deputy Director (F&A)
LARMIS, PMU

(Mumtaz Ali Gopang)
Deputy Secretary (Dev-II)
Finance Deptt, Govt. of Sindh/
Member CSC

(Athar Hussain Baloch)
IT Deptt, Govt. of Sindh/Member CSC

(Zulfiqar Ali Nizamani)
Project Director PMU
Board of Revenue Sindh/Member CSC

(Zulfiqar Ali Shah)
Member R&S,
Board of Revenue, Sindh/Chairman CSC

EVALUATION OF TECHNICAL BID OF BIDDERS FOR "ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND INFRANSTRUCTURE DEVELOPMENT OF 27 FACILITATION CENTERS IN SINDH
PROCUREMENT COMMITTEE ON 21-12-2012

S#	Criteria		Marks Obtained		
A		Max Marks	M/s. Zehra Communications	M/s. Jaffer Brothers	M/s. Commtel
A	Bidder's Profile	150	100	100	100
1	Years in Business (7 Years -25 Points; 5 Years - 15 Points)	25	25	25	25
2	ISO 9001 Certification	25	0	0	0
3	Turnover for Last Year (1 Billion in last 3 years or 500 million in last year - 75 points)	75	50	50	50
4	Profitable in each of last two years	25	25	25	25
B	Qualification of Management and Project Team	100	100	100	24
1	Full time resource on payrol permanent for last one (01) year prior to submission of bid (25 points)	25	25	25	14
2	Team	75	75	75	10
i	PMP	15	15	15	10
ii	CDCS	15	15	15	0
iii	System Engineer	10	10	10	0
iv	Network Engineer	10	10	10	0
v	Security Engineer	10	10	10	0
vi	HVAC Engineer	5	5	5	0
vii	Certified Fiber & Copper Cabling Installer	5	5	5	0
viii	NOC (Resident) Engineer	5	5	5	0
C	Bidders Experience	300	220	215	0
1	Successfully completed /performing at least (01) project in Pakistan with WAN Connectivity of 25 sites or more	50	35	35	0
2	Successfully completed at least one (01) Tier III Data Center from reputable certifying agency	200	150	150	0
3	Succesfully completed/performing at least one (01) project with multi-site surveillance	50	35	30	0
D	Understanding of Project Requirements and Detailed Design	150	110	75	120
	Bidder must establish through submitted documents, drawings and write-ups that it has an understanding of project requirements and shall submit its detailed design for the subject project. The submitted material would be evaluated for bidder's understanding of the project and upto 200 points would be awarded subjectively based on the quality of material submitted	150	110	75	120
E	Project Plan and Methodology	100	72	60	30
	Bidders must submit a detailed project plan and methodology meeting the purchaser's requirements. The submitted plan would be evaluated for bidder's understanding of the project and upto 100 points would be awarded subjectively based on the quality of project plan and methodology submitted	100	72	60	30
F	Proposed Solution and Compliance	150	128	130	70
	The entire technical solution would be evaluated for compliance with the specification provided in the BoQ. The offered solution would be evaluated against the requirements and upto 200 points would be awarded subjectively based on the submitted material	150	128	130	70
G	Support, Training and Service Capability	50	37	30	30
1	24-Hour Help Desk	10	10	10	10
2	Clearly defined support and escalation procedures in place	10	10	10	10
3	At least 3 resident engineers deputed at Customer projects	10	7	10	10
4	Training plan would be evaluated subjectively and upto 10 points would be awarded	10	0	0	0
5	Experience with developing data center SOPs	10	10	0	0
	Total	1000	767	710	574

(Zulfiqar Ali Shah)
Member P&S
Board of Revenue Sindh/
Chairman Procurement Committee

EVALUATION OF TECHNICAL BID OF BIDDERS FOR "ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND INFRANSTRUCTURE DEVELOPMENT OF 27 FACILITATION CENTERS IN SINDH" PROCUREMENT COMMITTEE ON 21-12-2017

S#	Criteria		Marks Obtained		
[illegible]		Max Marks	[illegible]	[illegible]	[illegible]
A	Bidder's Profile	[illegible]	[illegible]	[illegible]	[illegible]
1	Years in Business (7 Years -25 Points; 5 Years - 15 Points)	25	22	21	25
2	ISO 9001 Certification	25	0	0	0
3	Turnover for Last Year (1 Billion in last 3 years or 500 million in last year - 75 points)	75	50	50	50
4	Profitable in each of last two years	25	25	25	25
B	Qualification of Management and Project Team	100	98	96	[illegible]
1	Full time resource on payrol permanent for last one (01) year prior to submission of bid (25 points)	25	23	21	14
2	Team	75	75	75	10
i	PMP	15	15	15	10
ii	CDCS	15	15	15	0
iii	System Engineer	10	10	10	0
iv	Network Engineer	10	10	10	0
v	Security Engineer	10	10	10	0
vi	HVAC Engineer	5	5	5	0
vii	Certified Fiber & Copper Cabling installer	5	5	5	0
viii	NOC (Resident) Engineer	5	5	5	0
C	Bidders Experience	300	[illegible]	[illegible]	[illegible]
1	Successfully completed /performing at least (01) project in Pakistan with WAN Connectivity of 25 sites or more	50	30	31	0
2	Successfully completed at least one (01) Tier III Data Center from reputable certifying agency	200	145	140	0
3	Succesfully completed/performing at least one (01) project with multi-site surveillance	50	40	35	0
D	Understanding of Project Requirements and Detailed Design	150	[illegible]	[illegible]	[illegible]
	Bidder must establish through submitted documents, drawings and write-ups that it has an understanding of project requirements and shall submit its detailed design for the subject project. The submitted material would be evaluated for bidder's understanding of the project and upto 200 points would be awarded subjectively based on the quality of material submitted	150	110	75	120
E	Project Plan and Methodology	100	[illegible]	[illegible]	[illegible]
	Bidders must submit a detailed project plan and methodology meeting the purchaser's requirements. The submitted plan would be evaluated for bidder's understanding of the project and upto 100 points would be awarded subjectively based on the quality of project plan and methodology submitted	100	72	70	30
F	Proposed Solution and Compliance	150	[illegible]	[illegible]	70
	The entire technical solution would be evaluated for compliance with the specification provided in the BoQ. The offered solution would be evaluated against the requirements and upto 200 points would be awarded subjectively based on the submitted material	150	128	130	70
G	Support, Training and Service Capability	50	[illegible]	35	30
1	24-Hour Help Desk	10	10	10	10
2	Clearly defined support and escalation procedures in place	10	8	10	10
3	At least 3 resident engineers deputed at Customer projects	10	7	10	10
4	Training plan would be evaluated subjectively and upto 10 points would be awarded	10	0	5	0
5	Experience with developing data center SOPs	10	8	0	0
[illegible]	Total	1000	[illegible]	[illegible]	[illegible]

(Zulfiqar Ali Nizamani)
Project Director PMU
Board of Revenue Sindh
Member CSC

EVALUATION OF TECHNICAL BID OF BIDDERS FOR "ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND INFRANSTRUCTURE DEVELOPMENT OF 27 FACILITATION CENTERS IN SINDH"

PROCUREMENT COMMITTEE ON 21-12-2012

S#	Criteria	[illegible]	Marks Obtained		
		[illegible]	[illegible]	[illegible]	[illegible]
A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	Years in Business (7 Years -25 Points; 5 Years - 15 Points)	25	24	23	25
2	ISO 9001 Certification	25	0	0	0
3	Turnover for Last Year (1 Billion in last 3 years or 500 million in last year - 75 points)	75	50	50	50
4	Profitable in each of last two years	25	25	25	25
B	Qualification of Management and Project Team	100	103	100	24
1	Full time resource on payrol permanent for last one (01) year prior to submission of bid (25 points)	25	25	25	14
2	Team	75	78	75	10
i	PMP	15	15	15	10
ii	CDCS	15	15	15	0
iii	System Engineer	10	10	10	0
iv	Network Engineer	10	10	10	0
v	Security Engineer	10	10	10	0
vi	HVAC Engineer	5	4	5	0
vii	Certified Fiber & Copper Cabling Installer	5	10	5	0
viii	NOC (Resident) Engineer	5	4	5	0
C	Bidders Experience	[illegible]	[illegible]	[illegible]	[illegible]
1	Successfully completed /performing at least (01) project in Pakistan with WAN Connectivity of 25 sites or more	50	35	35	0
2	Successfully completed at least one (01) Tier III Data Center from reputable certifying agency	200	150	150	0
3	Succesfully completed/performing at least one (01) project with multi-site surveillance	50	35	30	0
D	Understanding of Project Requirement and Detailed Design	[illegible]	[illegible]	[illegible]	[illegible]
	Bidder must establish through submitted documents, drawings and write-ups that it has an understanding of project requirements and shall submit its detailed design for the subject project. The submitted material would be evaluated for bidder's understanding of the project and upto 200 points would be awarded subjectively based on the quality of material submitted	150	100	75	120
E	Project Plan and Methodology	[illegible]	[illegible]	[illegible]	[illegible]
	Bidders must submit a detailed project plan and methodology meeting the purchaser's requirements. The submitted plan would be evaluated for bidder's understanding of the project and upto 100 points would be awarded subjectively based on the quality of project plan and methodology submitted	100	72	55	30
F	Proposed Solution and Compliance	[illegible]	[illegible]	[illegible]	[illegible]
	The entire technical solution would be evaluated for compliance with the specification provided in the BoQ. The offered solution would be evaluated against the requirements and upto 200 points would be awarded subjectively based on the submitted material	150	128	130	70
G	Support, Training and Service Capability	[illegible]	[illegible]	[illegible]	[illegible]
1	24-Hour Help Desk	10	10	10	10
2	Clearly defined support and escalation procedures in place	10	10	8	10
3	At least 3 resident engineers deputed at Customer projects	10	10	10	10
4	Training plan would be evaluated subjectively and upto 10 points would be awarded	10	0	0	0
5	Experience with developing data center SOPs	10	5	0	0
	Total	[illegible]	[illegible]	[illegible]	[illegible]

(Rahim Bux Bugti)
Deputy Director F&A
LARMIS, PMU
Member CSC

EVALUATION OF TECHNICAL BID OF BIDDERS FOR "ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND INFRANSTRUCTURE DEVELOPMENT OF 27 FACILITATION CENTERS IN SINDH
PROCUREMENT COMMITTEE ON 21-12-2012

S#	Criteria		Marks Obtained		
		Max Marks	M/s Zehra Communications	M/s Jaffer Brothers	M/s. Commtel
A	Bidder's Profile	150	100	100	100
1	Years in Business (7 Years -25 Points, 5 Years - 15 Points)	25	25	25	25
2	ISO 9001 Certification	25	0	0	0
3	Turnover for Last Year (1 Billion in last 3 years or 500 million in last year - 75 points)	75	50	50	50
4	Profitable in each of last two years	25	25	25	25
B	Qualification of Management and Project Team	100	100	100	24
1	Full time resource on payrol permanent for last one (01) year prior to submission of bid (25 points)	25	25	25	14
2	Team	75	75	75	10
i	PMP	15	15	15	10
ii	CDCS	15	15	15	0
iii	System Engineer	10	10	10	0
iv	Network Engineer	10	10	10	0
v	Security Engineer	10	10	10	0
vi	HVAC Engineer	5	5	5	0
vii	Certified Fiber & Copper Cabling Installer	5	5	5	0
viii	NOC (Resident) Engineer	5	5	5	0
C	Bidders Experience	300	220	215	10
1	Successfully completed /performing at least (01) project in Pakistan with WAN Connectivity of 25 sites or more	50	35	35	0
2	Successfully completed at least one (01) Tier III Data Center from reputable certifying agency	200	150	150	0
3	Succesfully completed/performing at least one (01) project with multi-site surveillance	50	35	30	0
D	Understanding of Project Requirements and Detailed Design	150	110	75	120
	Bidder must establish through submitted documents, drawings and write-ups that it has an understanding of project requirements and shall submit its detailed design for the subject project. The submitted material would be evaluated for bidder's understanding of the project and upto 200 points would be awarded subjectively based on the quality of material submitted	150	110	75	120
E	Project Plan and Methodology	100	72	60	30
	Bidders must submit a detailed project plan and methodology meeting the purchaser's requirements. The submitted plan would be evaluated for bidder's understanding of the project and upto 100 points would be awarded subjectively based on the quality of project plan and methodology submitted	100	72	60	30
F	Proposed Solution and Compliance	150	128	130	70
	The entire technical solution would be evaluated for compliance with the specification provided in the BoQ. The offered solution would be evaluated against the requirements and upto 200 points would be awarded subjectively based on the submitted material	150	128	130	70
G	Support, Training and Service Capability	50	37	30	30
1	24-Hour Help Desk	10	10	10	10
2	Clearly defined support and escalation procedures in place	10	10	10	10
3	At least 3 resident engineers deputed at Customer projects	10	7	10	10
4	Training plan would be evaluated subjectively and upto 10 points would be awarded	10	0	0	0
5	Experience with developing data center SOPs	10	10	0	0
	Total	1000	787	730	474

(Mumtaz Ali Gopang)
Deputy Secretary Dev-II
Finance Deptt., Govt. of Sindh
Member CSC

EVALUATION OF TECHNICAL BID OF BIDDERS FOR "ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND INFRANSTRUCTURE DEVELOPMENT OF 27 FACILITATION CENTERS IN SINDH" PROCUREMENT COMMITTEE ON 21-12-2012

S#	Criteria		Marks Obtained		
		Max Marks	M/s [illegible] Communication	M/s [illegible] Solution	M/s [illegible]
A	Bidder Profile	300	[illegible]	[illegible]	[illegible]
1	Years in Business (7 Years -25 Points; 5 Years - 15 Points)	25	25	25	25
2	ISO 9001 Certification	25	0	0	0
3	Turnover for Last Year (1 Billion in last 3 years or 500 million in last year - 75 points)	75	50	50	50
4	Profitable in each of last two years	25	25	25	25
B	Qualification of Management and Project team	200	100	200	24
1	Full time resource on payrol permanent for last one (01) year prior to submission of bid (25 points)	25	25	25	14
2	Team	75	75	75	10
i	PMP	15	15	15	10
ii	CDCS	15	15	15	0
iii	System Engineer	10	10	10	0
iv	Network Engineer	10	10	10	0
v	Security Engineer	10	10	10	0
vi	HVAC Engineer	5	5	5	0
vii	Certified Fiber & Copper Cabling Installer	5	5	5	0
viii	NOC (Resident) Engineer	5	5	5	0
C	Bidder Experience	100	[illegible]	35	0
1	Successfully completed /performing at least (01) project in Pakistan with WAN Connectivity of 25 sites or more	50	35	35	0
2	Successfully completed at least one (01) Tier III Data Center from reputable certifying agency	200	150	150	0
3	Succesfully completed/performing at least one (01) project with multi-site surveillance	50	35	30	0
D	Understanding of Project requirements and Detailed Design	150	[illegible]	80	[illegible]
	Bidder must establish through submitted documents, drawings and write-ups that it has an understanding of project requirements and shall submit its detailed design for the subject project. The submitted material would be evaluated for bidder's understanding of the project and upto 200 points would be awarded subjectively based on the quality of material submitted	150	120	80	120
E	Project Plan and Methodology	100	[illegible]	[illegible]	[illegible]
	Bidders must submit a detailed project plan and methodology meeting the purchaser's requirements. The submitted plan would be evaluated for bidder's understanding of the project and upto 100 points would be awarded subjectively based on the quality of project plan and methodology submitted	100	85	65	30
F	Proposed Solution and Compliance	150	[illegible]	[illegible]	[illegible]
	The entire technical solution would be evaluated for compliance with the specification provided in the BoQ. The offered solution would be evaluated against the requirements and upto 200 points would be awarded subjectively based on the submitted material	150	128	130	70
G	Support, Training and Service capability	50	[illegible]	[illegible]	[illegible]
1	24-Hour Help Desk	10	10	10	10
2	Clearly defined support and escalation procedures in place	10	10	10	10
3	At least 3 resident engineers deputed at Customer projects	10	7	10	10
4	Training plan would be evaluated subjectively and upto 10 points would be awarded	10	0	0	0
5	Experience with developing data center SOPs	10	10	0	0
	Total	1000	[illegible]	[illegible]	[illegible]

(Athar Hussain Baloch)
IT Deptt., Govt. of Sindh
Member CSC

EVALUATION OF TECHNICAL BID OF M/S. ZAHRA COMMUNICATIONS

For Establishment of Data Center, Disaster Recovery Center,
& Facilitation Centers for LARMIS
By Technical Sub-Committee of PMU

Table 1: Technical Evaluation Criteria

Technical Evaluation Criteria	Score
A. Bidder's Profile	150 Points
1. Years in Business 25 Points a. 7 years – 25 points b. 5 years – 15 points	25 (F/A)
2. ISO 9001 Certification 25 Points	0
3. Turnover for last year 75 Points a. Rs. 1 Billion in last 3 years or 500 million in last year - 75 Points b. Rs. 800 million in last 3 years or 400 million in last year - 50 Points	50
4. Profitable in each of last two years 25 Points	25 (F/D)
B. Qualifications of Management and Project Team	100 Points
1. At least 25 Full Time Resources on payroll as full time permanent employee for at least one (1) year prior to submission of bid - 25 Points	**25** (F/E)
2. Team - 75 points	**75**
• PMP – 15 points	15
• CDCS (Certified Data Centre Specialist) – 15 points	10
• System Engineer (Microsoft Certified) – 10 points	10
• Network Engineer (CCIE / JNCIE) – 10 points	10
• Security Engineer (ITSM/CISSP) – 10 points	05
• HVAC Engineer – 5 points	05
• Certified Fiber & Copper Cabling Installer – 5 points	05
• NOC (Resident) Engineers (BE / BS) – 5 points	
C. Bidder Experience	300 Points
1. Successfully completed or is performing on at least one (01) project in Pakistan with WAN connectivity connecting 25 sites or more - 50 Points	35
2. Successfully completed at least one (01) Certified Tier III Data Centre from reputable certifying Agency - 200 Points	150
3. Successfully completed or is performing on at least one (01) project with Multi-Site Surveillance - 50 Points	35

D. Understanding of Project Requirements and Detailed Design Bidder must establish through submitted documents, drawings and write-ups that it has an understanding of project requirements and shall submit its detailed design for the subject project. The submitted material would be evaluated for Bidder's understanding of the project and upto 200 points would be awarded subjectively based on the quality of material submitted	150 110
E. Project Plan and Methodology Bidder must submit a detailed project plan and methodology meeting the Purchaser's requirements. The submitted plan would be evaluated for Bidder's understanding of the project and upto 100 points would be awarded subjectively based on the quality of project plan and methodology submitted	100 72
F. Proposed Solution and Compliance The entire technical solution would be evaluated for compliance with the specifications provided in the BoQ. The offered solution would be evaluated against the requirements and upto 200 points would be awarded subjectively based on the submitted material	150 128
G. Support, Training and Services Capability 1. 24 Hour Help Desk 10 Points 2. Clearly defined support and escalation procedures in place 10 Points 3. At least 3 Resident Engineers deputed at Customer Projects 10 Points 4. Training Plan would be evaluated subjectively and upto 10 Points would be awarded 5. Experience with developing Data Centre SOPs 10 Points	50 37

Total Marks Obtained: **767** out of **1000**

Deputy Director GIS
PMU

Network Administrator,
LARMIS, PMU

Deputy Director IT
LARMIS, PMU

Assistant Director P/CM
LARMIS, PMU

Assistant Director (Coord.)
LARMIS, PMU

EVALUATION OF TECHNICAL BID OF M/S. JAFFER BROTHERS

For Establishment of Data Center, Disaster Recovery Center,
& Facilitation Centers for LARMIS
By Technical Sub-Committee of PMU

Table 2: Technical Evaluation Criteria

Technical Evaluation Criteria	Score
A. Bidder's Profile	150 Points
2. Years in Business 25 Points c. 7 years – 25 points d. 5 years – 15 points	25 (F/A)
5. ISO 9001 Certification 25 Points	0
6. Turnover for last year 75 Points c. Rs. 1 Billion in last 3 years or 500 million in last year - 75 Points d. Rs. 800 million in last 3 years or 400 million in last year - 50 Points	50
7. Profitable in each of last two years 25 Points	25
B. Qualifications of Management and Project Team	100 Points
3. At least 25 Full Time Resources on payroll as full time permanent employee for at least one (1) year prior to submission of bid - 25 Points	**25** (F/B)
4. Team - 75 points	**75**
• PMP – 15 points	15
• CDCS (Certified Data Centre Specialist) – 15 points	15
• System Engineer (Microsoft Certified) – 10 points	10
• Network Engineer (CCIE / JNCIE) – 10 points	10
• Security Engineer (ITSM/CISSP) – 10 points	10
• HVAC Engineer – 5 points	05
• Certified Fiber & Copper Cabling Installer – 5 points	05
• NOC (Resident) Engineers (BE / BS) – 5 points	05
C. Bidder Experience	300 Points
1. Successfully completed or is performing on at least one (01) project in Pakistan with WAN connectivity connecting 25 sites or more - 50 Points	35
2. Successfully completed at least one (01) Certified Tier III Data Centre from reputable certifying Agency - 200 Points	150
3. Successfully completed or is performing on at least one	

(01) project with Multi-Site Surveillance - 50 Points	30
D. Understanding of Project Requirements and Detailed Design Bidder must establish through submitted documents, drawings and write-ups that it has an understanding of project requirements and shall submit its detailed design for the subject project. The submitted material would be evaluated for Bidder's understanding of the project and upto 200 points would be awarded subjectively based on the quality of material submitted	150 75
E. Project Plan and Methodology Bidder must submit a detailed project plan and methodology meeting the Purchaser's requirements. The submitted plan would be evaluated for Bidder's understanding of the project and upto 100 points would be awarded subjectively based on the quality of project plan and methodology submitted	100 60
F. Proposed Solution and Compliance The entire technical solution would be evaluated for compliance with the specifications provided in the BoQ. The offered solution would be evaluated against the requirements and upto 200 points would be awarded subjectively based on the submitted material	150 130
G. Support, Training and Services Capability 1. 24 Hour Help Desk 10 Points 2. Clearly defined support and escalation procedures in place 10 Points 3. At least 3 Resident Engineers deputed at Customer Projects 10 Points 4. Training Plan would be evaluated subjectively and upto 10 Points would be awarded 5. Experience with developing Data Centre SOPs 10 Points	50 10 10 10 0 0

Total Marks Obtained: **710** out of **1000**

Deputy Director GIS
PMU

Network Administrator,
LARMIS, PMU

Deputy Director IT
LARMIS, PMU

Assistant Director P/CM
LARMIS, PMU

Assistant Director (Coord.)
LARMIS, PMU

EVALUATION OF TECHNICAL BID OF M/S. COMMTEL
For Establishment of Data Center, Disaster Recovery Center,
& Facilitation Centers for LARMIS
By Technical Sub-Committee of PMU

Table 3: Technical Evaluation Criteria

Technical Evaluation Criteria	Score
A. Bidder's Profile	150 Points
3. Years in Business 25 Points e. 7 years – 25 points f. 5 years – 15 points	25 (F/A)
8. ISO 9001 Certification 25 Points	0 (F/B)
9. Turnover for last year 75 Points e. Rs. 1 Billion in last 3 years or 500 million in last year - 75 Points f. Rs. 800 million in last 3 years or 400 million in last year - 50 Points	50 (F/C)
10. Profitable in each of last two years 25 Points	25 (F/D)
B. Qualifications of Management and Project Team	100 Points
1. At least 25 Full Time Resources on payroll as full time permanent employee for at least one (1) year prior to submission of bid - 25 Points	14 (F/E)
2. Team - 75 points • PMP – 15 points • CDCS (Certified Data Centre Specialist) – 15 points • System Engineer (Microsoft Certified) – 10 points • Network Engineer (CCIE / JNCIE) – 10 points • Security Engineer (ITSM/CISSP) – 10 points • HVAC Engineer – 5 points • Certified Fiber & Copper Cabling Installer – 5 points • NOC (Resident) Engineers (BE / BS) – 5 points	10(F/F)
C. Bidder Experience	300 Points
1. Successfully completed or is performing on at least one (01) project in Pakistan with WAN connectivity connecting 25 sites or more - 50 Points	0
2. Successfully completed at least one (01) Certified Tier III Data Centre from reputable certifying Agency - 200 Points	0
3. Successfully completed or is performing on at least one (01) project with Multi-Site Surveillance - 50 Points	0

D. Understanding of Project Requirements and Detailed Design Bidder must establish through submitted documents, drawings and write-ups that it has an understanding of project requirements and shall submit its detailed design for the subject project. The submitted material would be evaluated for Bidder's understanding of the project and upto 200 points would be awarded subjectively based on the quality of material submitted	150 120
E. Project Plan and Methodology Bidder must submit a detailed project plan and methodology meeting the Purchaser's requirements. The submitted plan would be evaluated for Bidder's understanding of the project and upto 100 points would be awarded subjectively based on the quality of project plan and methodology submitted	100 30
F. Proposed Solution and Compliance The entire technical solution would be evaluated for compliance with the specifications provided in the BoQ. The offered solution would be evaluated against the requirements and upto 200 points would be awarded subjectively based on the submitted material	150 70
G. Support, Training and Services Capability 1. 24 Hour Help Desk 10 Points 2. Clearly defined support and escalation procedures in place 10 Points 3. At least 3 Resident Engineers deputed at Customer Projects 10 Points 4. Training Plan would be evaluated subjectively and upto 10 Points would be awarded 5. Experience with developing Data Centre SOPs 10 Points	50 30

Total Marks Obtained: **374** out of **1000**

Deputy Director GIS
PMU

Network Administrator,
LARMIS, PMU

Deputy Director IT
LARMIS, PMU

Assistant Director P/CM
LARMIS, PMU

Assistant Director (Coord.)
LARMIS, PMU

BOARD OF REVENUE SINDH
PROJECT MANAGEMENT UNIT
Dated: 14-11-2013

MINUTES OF THE PRE-BID MEETING REGARDING PROCUREMENT OF SERVICES FOR ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND INFRASTRUCTURE DEVELOPMENT OF 27 FACILITATION CENTERS IN SINDH ON 14TH NOVEMBER 2012 AT PMU, KARACHI

The meeting started with the introduction of the participants followed by a brief on the assignment by the Project Director PMU.

The participanting bidders were invited to raise queries if any relating to the Request for Proposal Document (RFP) issued to the bidders. The bidders came up with a large number of queries which were responded to the bidders satisfactorily and written responses were also compiled and delivered to the bidders receipt of which was acknowledged by the bidders.

Moreover, the participating bidders made unanimous request for extension in last date of submission enabling the bidders to make written queries in clarification in view of complex nature of assignment.

All the participating bidders were informed about directives of the Honourable Supreme Court of Pakistan requiring immediate completion of the computerization of land records and the firms were apprised that any decision regarding extension in date of submission of bid would be made by the competent authority in view of the urgency involved due to orders of the Honourable Court.

The meeting ended with a vote of thanks to and from the chair.

LIST OF PARTICIPANTS

PRE-BID MEETING REGARDING REQUEST FOR PROPOSAL DOCUMENT FOR DATA CENTER, DISASTER RECOVERY CENTER AND SINDH PROPERTY RECORDS FACILITATION CENTERS

DATED: 14-11-2012 @ 02:00 PM IN THE COMMITTEE ROOM OF PMU

S.No.	Name	Designation	Signature
1	Azhar Khalid	Product Manager	[signature]
2	Dr. Sohail Munir	Uffey Technologies CEO	[signature]
3	Noman Said	Director Operations AGEN	[signature]
4	Muhammad Zakaullah	Manager Consulting Services - DWP	M. Zakaullah
5	Zohaib Shabir	Manager Networks DWP Technologies	[signature]
6	S. Azfar Ali	Zahra Corner	[signature]
		PARTICIPATING FIRMS	
7	Waqar Ahmed Chishti	Asst Manager Trade & Projects	[signature]
8	Babar Shami	Manager IT Trade & Co.	[signature]
9	Moin Ahmed	Deployment professional Trade + Co	[signature]
10	AKBAR RIZVI	DIRECTORS.	[signature]

ZEESHAN QURESHI TEXPO PAKISTAN

Ahsan / Majid. Committed [signature]

11	Syed Shamoon Ahmad	Ever Shine.	[signature]
12	Arsalan Yousuf Adam Saeed	Manager Manager Deloitte Pakistan	[signature]
	ZAFAR IQBAL Wajih vadin Gilani	Project Manager Project Manager	[signature] CTTC [signature] CTTC
	ASIM RAZA	Server & Sale TSM.	[signature]
	Rehan Shah	Server & Sale Senior Manager	[signature]
	M. Anwar Afzal. M. Iqbal.	Key A/C. Manager	[signature]

No. 02-11-10-PMU/BOR/2012/ 1133

BOARD OF REVENUE SINDH
PROJECT MANAGEMENT UNIT

Dated: 03 -12-2012

To,

All interested bidders

Subject: **QUERIES RELATING TO THE RFP FOR ESTABLISHMENT OF DATA CENTRE, DISASTER RECOVERY CENTRE AND PROPERTY RECORD FOR REVENUE PROPERTY RECORDS OF SINDH PROVINCE**

Please find herewith annexed reply of queries made by an interested vendor on the RFP for Establishment of Data Centre, Disaster Recovery Centre and Property Record for Revenue Property Records of sindh province.

DEPUTY DIRECTOR (F&A)
LARMIS, PMU

Copy is submitted for information to:-

1. The Project director, PMU, R&S wing, Board of Revenue, Sindh

DEPUTY DIRECTOR (F&A)
LARMIS, PMU

S. No.	Query	Response
1	Can we just quote hardware i.e. servers and storage, in the case we will be able to participate and tender documents will be collected.	Bidders have to bid as per the RFP, incomplete proposals will not be acceptable
2	This is a very large complex projects and sufficient time has not been given to the bidder to respond. Please extend this by one month. We also request another Pre-Bid meeting to clarify our queries as sufficient preparation time was not given for the previous Pre-Bid meeting.	Submission date is December 7, 2012 at 3:00 noon and bid will be open on same day at 3:30 pm
3	Addresses of Property Record Center and DR facility have not been provided so as to quote the price of connectivity	At District Head Quarters near DC Offices
4	You have asked for Tier Certification. What Tier should the DC and DR site be certified to?	There is no Tier certification is desired. However, 3rd party audit is desired in order to verify the tier standard on solution provided by successful bidder.
5	The course asked for like CDCS are courses of one specific vendor, can alternate course be offered?	Yes can be offered
6	The SAN and Storage at DR Facility is specific to one vendor. Can alternate be offered?	bid according to RFP specs or equivalent which should meet the requirements
7	You have asked for DCIE or CDCP in the requirement but given Marks for only CDCP in the evaluation criteria please advise.	The bid will be evaluate as per the given criteria
8	You have mentioned 12 Cabinets in the Data Centre but asked for containment solution for only 10 please advise.	Containment solution desired for only 10 racks because 2 racks are for staging area
9	Should the Containment Solution include Power Distribution also?	Yes
10	Should the Containment Solution include provision of skylight for Fire Suppression.	Fire Suppression is eliminated as per addendum
11	Do we have to design Active Directory Schema also or would that be provided to us?	Design by bidder
12	Fiber Channel switches are not included in the BoQ and required for FC SAN? Does BoR already have FC switches?	Please include in your proposal
13	We cannot source and epoxy complaint to $20.20. Can alternate Epoxy be provided?	bid according to RFP specs or equivalent which should meet the requirements
14	Please share the detailed design documents so we can vet the solution before submittal.	Proposal should be based on BOQ in compliance with RFP
15	Would the price of all the optional items be considered in evaluation?	only the mandatory BOQ price will be considered in evaluation

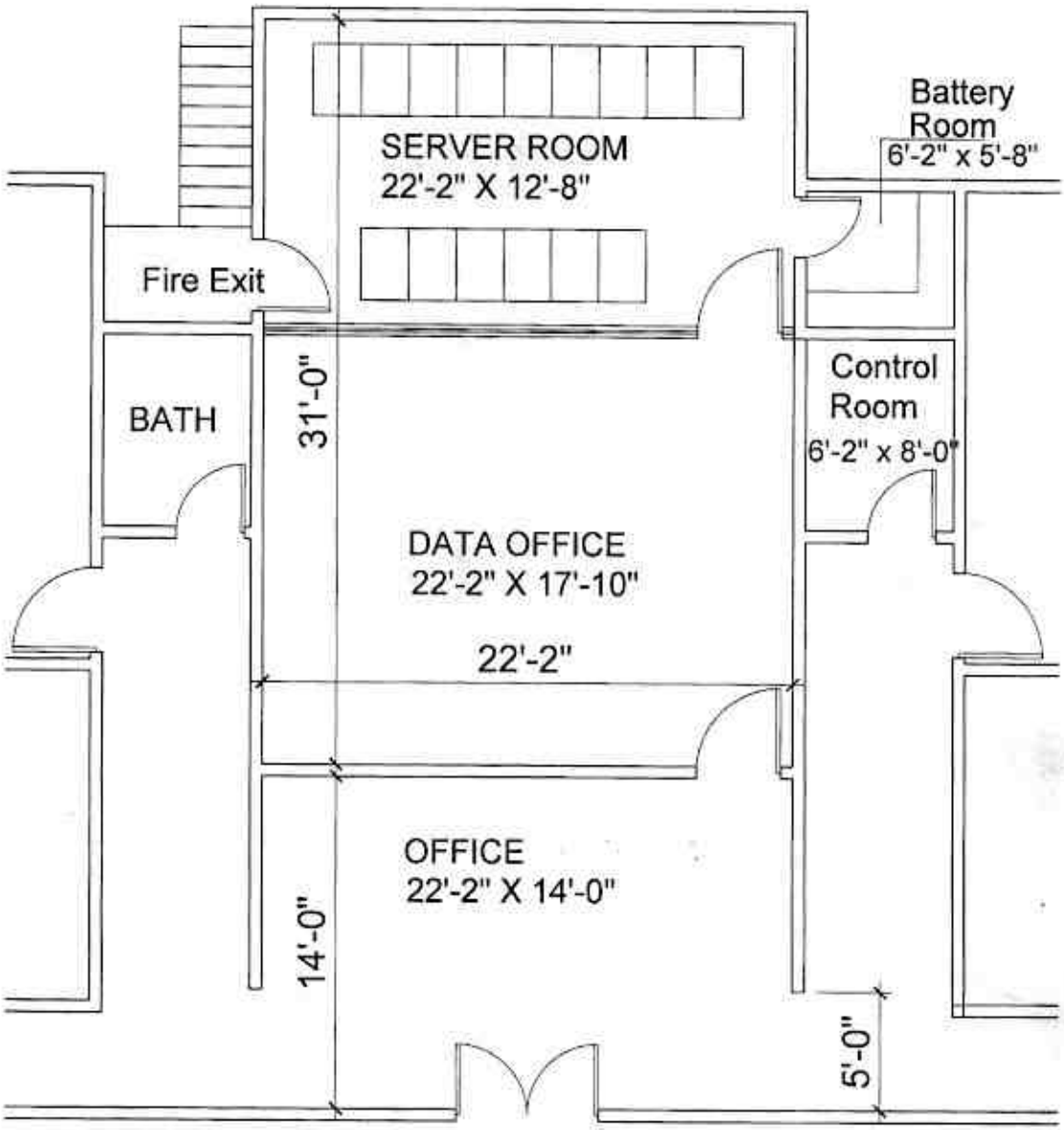
16	This is with reference to the "Tender Notice For Renovation of Office Building For Establishment of Data Center & Disaster Recovery Center" regarding above-mentioned subject according to advertisement the last date of Proposal Submission is 22-11-12, it is requested that kindly extend the submission date at least one month therefore; Pre-Bid (minutes of meeting) answer still awaiting.	Submission date is December 7, 2012 at 3:00 noon and bid will be open on same day at 3:30 pm
17	We are in the receipt of the Bid Documents. We hereby request you to extend the bid submission date by at least two weeks. This is a very complex project and you even allowed 15 days to submit the bid as required by SPPRA. We thank you for your consideration and extending the bid submission date by at least two weeks.	Submission date is December 7, 2012 at 3:00 noon and bid will be open on same day at 3:30 pm
18	Sufficient time has not been given to prepare a proper response to the RFP document. Additionally very important pieces of information are still not shared with the bidders, which are very important for preparing a response to this RFP. We therefore request the competent authorities to extend the date of submission of this bid by one month so that all bidders have a fair opportunity to properly respond to this RFP in the interest of the project. It may be noted that in complex and large projects like this, at least one month response time is a prevailing industry practice.	Submission date is December 7, 2012 at 3:00 noon and bid will be open on same day at 3:30 pm
19	The RFP was issued on 9 November which was Public Holiday followed by the week-end. The first working day after the issuance of RFP was 12 November and Pre-Bid meeting was held on 14 November, not giving sufficient time to bidders to review the RFP and prepare their queries. Additionaly the Purchaser IT team was not well-versed on the subject matter and kept on giving contradictory explanation during the Pre-Bid Meeting. We left the Pre-Bid meeting further confused. We therefore request the Purchaser to kindly consider our request and schedule another Pre-Bid meeting to properly address all queries of the prospective bidders. We also request that persons competent to respond to the technical queries be present in that Pre-Bid meeting.	Submission date is December 7, 2012 at 3:00 noon and bid will be open on same day at 3:30 pm
20	At the Pre-Bid meeting an Addendum was issued adding the requirement of DC and DR design validation as well as DC and DR 3rd party audit by epi or optime. Whereas it was not mentioned that to what Tier Level is this required for. The IT person representing the Purchaser said the it should be Tier III for both. When pointed out that DR BoQ provided is without redundancy then he mentioned that DC shall be Tier I. When pointed out that the DC location is not capable to be Tier III certified. They mentioned that they need certification to whatever Tier possible. What's the point of Tier design validation and 3rd party audit if it has to be certified to "Whatever" Tier possible? We are very confused on this aspect. Please Clarify	There is no Tier certification is desired. However, 3rd party audit is desired in order to verify the tier standard on solution provided by successful bidder.
21	In the Addendum issued, Cameras and NOVEC has been removed from the BoQ. We raised this query that how wills the Data Centre be certified to any Tier without these items. The response given to us was that just get components being installed Tier certified. We must point out that this is not possible. Tier system is a whole package. Either all components of the Data Centre are meeting a certain Tier requirement of the entire facility is not meeting the Tier requirement. This ambiguity was not addressed in the meeting. Please Clarify	There is no Tier certification is desired. However, 3rd party audit is desired in order to verify the tier standard on solution provided by successful bidder.
22	As per the Addendum 10% payment would be made against Design Validation. However the Purchaser is providing the design. So would we be paid 10% upfront for no work?	we have provided components in BOQ however Design is responsibility of the vendor.
23	CDCP, CDCS, ITIL and ISMS trainings are available locally. Should we still offer Foreign Trainings? If so please advise what country should these trainings be held in.	as per BOQ

24	Data center drawings, High Level Network and Systems design have not been provided to us. So we cannot validate the design and assure inter-operability of the components required in this RFP. Shall we assume that this would be the reasonability of the Purchaser to ensure inter-operability?	we have provided the BOQ however LLD & integration, inter-operability is responsibility of the vendor
25	150 Points in the Evaluation Criteria have been given for Design. However the detailed BoQ has been designed by the Purchaser. Please explain what is expected from us to score maximum on this criteria?	we have provided components in BOQ however Design is responsibility of the vendor.
26	We assume that the Purchaser is taking the responsibility that Civil Structure would sustain the Load of the Data Centre and DR facility.	Yes
27	You have asked for Ku Band bandwidth for the DVB-S2 Hub. Is there a preference for PAKSAT for this or can we provide bandwidth from any Satellite having foot-print in Sindh.	can offer any but foot print has to be cover all the locations
28	If the Queue Management System is provided only in English and Urdu and not Sindhi would that be acceptable?	Sindhi language is necessary
29	Would it be our responsibility to provide mechanism for switchover from OFC to DVB-S2?	Yes
30	We are not very clear it a D2D2T solution is required at both the DC and DR	Only VTL Solution required
31	How much data size is to be expected upon data loading?	Provide the connectivity as desired in BOQ
32	What application will be hosted in the data center?	MIS/GIS based LARMIS application as described in RFP
33	Is bare metal recovery required for all the servers with application protection?	Yes
34	The free version of virtual machine manager is required as part of deployment or some feature rich management interfaces are required for VM management such as HA, load balancing and other backup requirements. Please clarify.	Yes
35	Please specify the names and locations of 27 Property Record Centers/Customer Facilitation Centers.	At District Head Quarters near DC Offices
36	Kindly provide the Data center design for Karachi and Hyderabad.	we have provided components in BOQ however Design is responsibility of the vendor.
37	TIA-942 environmental recommendation, says that fire suppression should be included as a standard. As per the Addendum dated 29-9-2012, Serial #s 3 & 4, the requirement is now deleted. We would appreciate, in such scenario how the 3rd party audit will be successful and how the vendor will become eligible to collect its 20% payment.	3rd party audit is desired in order to verify the tier standard on solution provided by successful bidder.

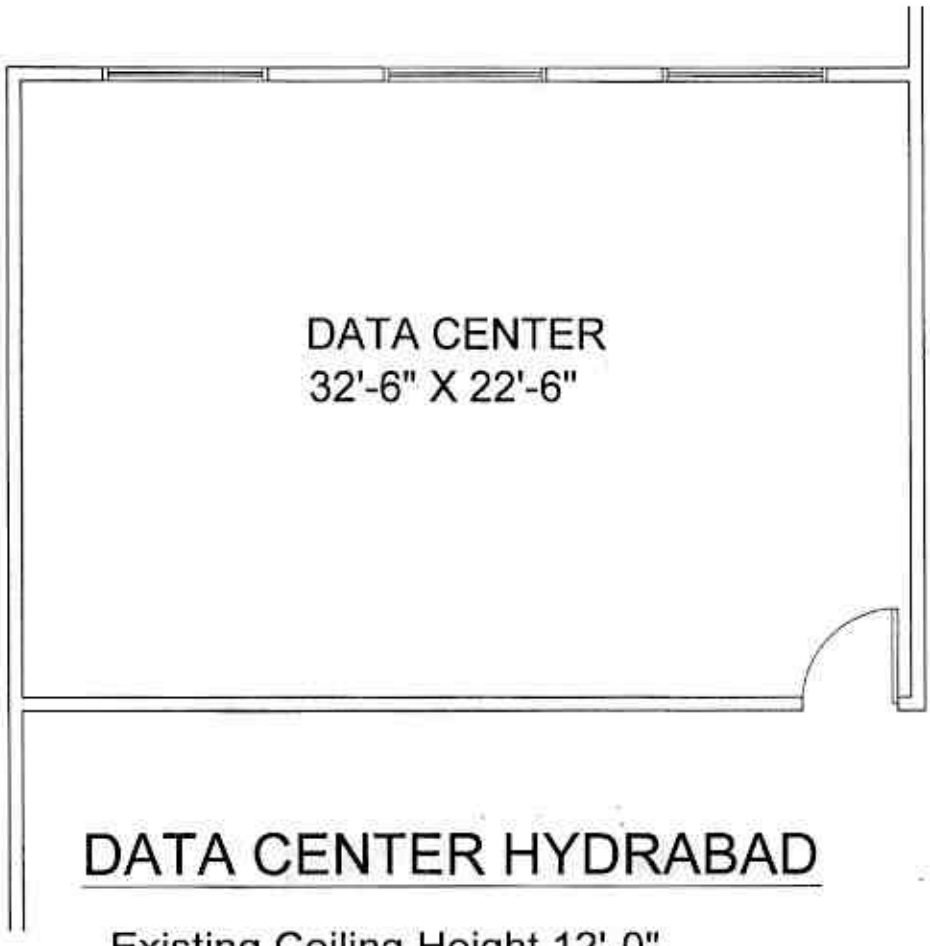
38	Please elaborate the following: The documentary evidence of conformity of the proposed solution to the Bidding Documents shall be in the form of written descriptions, literature, diagrams, certifications and client references, including: a written confirmation that the Bidder shall accept responsibility for the successful integration and inter-operability of all components of the proposed as required by the Bidding Documents.	It is a written confirmation that the Bidder shall accept responsibility for the successful integration and inter-operability of all components of the proposed as required by the Bidding Documents.
39	Please elaborate point: Change of Order: Drawings, designs or specifications, where goods to be furnished under the Contract are to be specifically manufactured for Purchaser.	Meaning no Grey Channel equipment or equipment intended for some other customer would be accepted
40	Can BoR, inform us what Tier type is now finally required for DC and DRC after all the changes made in the RFP?	There is no Tier certification is desired.
41	BoQ - Page 115/Section 7.1.4 Training Services/Point 181 & Section 4.12.2.1 vis-s-vis Trainings is inconsistent with the above BoQ (Different Training).	see addendum
42	BoQ - Page 104/ Point 155 - Storage Tank for Diesel/Fuel is for 48 hrs. However, TIA-942 requires fuel reserves for 72 hrs of operations.	We required 48 hours as mentioned in the BOQ
43	There is no mention of Phase Reversal Mechanism shall the power phases gets interchanged among themselves. As a precaution, all three phase load would stop to avoid any untoward situation (as the direction of rotation would be reversed.	It should be design by the switch gear manufacturer
44	There is no mention of Building Lightning Protection System to avoid any natural catastrophe and safeguard the Data Center.	Not required
45	The new standard for Tier-III Data Center is TIA-942A.	Follow the standard as mentioned in RFP
46	RFP build on apple to apple specs of IBM thus resulting in discouragement of other vendors. This is clearly a serious violation of SPPRA. This may result in loss of revenue of government as BOR will not be able to have competitive proposals from other vendors.	Standard specs followed supporting to all.
47	Interoperability is a big question here as current RFP is silent on this portion. Who will be held responsible if there any issue arise at the time of integration. As RFP specs are purely based on a vendor specs and we only supposed to provide the hardware without knowing your actual requirement so interoperability would be a major problem.	Vendor is responsible to proposed comprehensive solution catering interoperability of equipments.
48	RFP is silent on the dimensions of both site i.e. Karachi Data Center and Hyderabad DR site.	Annexed
49	Data Center Certification is required then we must know and confirmation from your side that all aspects are covered in your RFP for compliance. If anything missing who will be held responsible.	There is no Tier certification is desired. However, 3rd party audit is desired in order to verify the tier standard on solution provided by successful bidder.
50	Power and cooling are defined in RFP, need to have a confirmation from your kind office that those are 100% according to your requirements	Yes, As per the requirement

51	In order to submit you a comprehensive proposal we need to have answers from your kind office and request you to extend submission time for one month. Compilation of proposal for such a big project is not possible in given time which is 22nd Nov 2012. Please note that we receive this RFP on 9th November 2012 (Iqbal Day).	Submission date is December 7, 2012 at 3:00 noon and bid will be open on same day at 3:30 pm
52	BoQ - Page 115/Section 7.1.4 Training Services/Point 181 & Section 4.12.2.1 vis-a-vis Trainings is inconsistent with the above BoQ (Different Training)	see addendum
53	BoQ - Page 104/ Point 155 - Storage Tank for Diesel/Fuel is for 48 hrs. However, TIA-942 requires fuel reserves for 72 hrs of operations.	We required 48 hours as mentioned in the BOQ
54	There is no mention of Phase Reversal Mechanism shall the power phases gets interchanged among themselves. As a precaution, all three phase load would stop to avoid any untoward situation (as the direction of rotation would be reversed.	It should be design by the switch gear manufacturer
55	There is no mention of Building Lightning Protection System to avoid any natural catastrophe and safeguard the Data Center.	Not required
56	The new standard for Tier-III Data Center is TIA-942A.	Standard specs followed supporting to all.
57	Since the items related to surveillance have been deleted from the BoQ as per the addendum, do you still require experience of Multi-Site Surveillance covering 50 points in technical evaluation?	The bid will be evaluate as per the given criteria
58	Can you provide a layout of the space allocated for data center and disaster recovery center with exact measurements?	Annexed
59	In section 3.3.5 – Documents Establishing the Conformity of Proposed Solution to Bidding Documents, it says in 3.3.3.5 that i) We need to provide detailed drawings, design parameters, design calculations, put-up sheets and outputs of any tools used for capacity planning. Why do you require these things when the drawings, designs and planning have already been done by BOR? Based on your RFP, we are not doing any designing, drawing or capacity planning; rather, we are only arranging equipment / hardware / software / services in conformance to the requirements of BoQ. The design, drawing & capacity planning is BOR's responsibility. Please clarify. ii) In the same section, you also require an item-by-item commentary on each technical requirement listed in BoQ. We can do the commentary on each technical requirement as an individual basis, but as a complete solution, we cannot. Since the planning & technical requirements are made by BOR based on its own design, we cannot comment on these requirements as One-Solution.	i) Vendor responsibility to provide the detailed drawings, design parameters, design calculations, put-up sheets and outputs of any tools used for capacity planning. ii) we will consider the solution who so ever comply all the desired solution in letter and spirit of the RFP.

	iii) In the same section, you require the bidders to confirm in writing that Bidders shall take responsibility for the successful integration and inter-operability of all components. We cannot take this responsibility, as your BoQ is dictating a specific requirement, which will result in a heterogeneous environment, and there are always some issues on integration & inter-operability in such environments. iv) As per section 7 – Bill of Quantities (BoQ), you require the bidders to provide detailed drawings based on which the solution has been offered. Again, this designing is done by BOR, not the bidders. We suggest that you share the design & planning documents with all the bidders so that we can provide you our feedback and comments on the design, drawings and the specifications in BoQ. Without the design documents, we cannot provide one comprehensive solution; instead, we will only be providing you equipment / hardware and services in response to each item in BoQ. v) Section 8.1.10 – Design Documents require detailed design documents, including design put-up sheets, engineering drawings, single line drawings and configuration plan. These cannot be provided in the proposal stage as core designing of the data center is not in our hands.	iii) interoperability is mandatory. iv) designed has to be provide by the vendor. v) based on the BOQ vendor can provide the designed sheets.
60	Most of the equipment & software listed in the BoQ are purchased in US Dollars ($). As we are required to provide our bids in Pak Rupees (PKR), will PMU-BOR allow price adjustments in the later stage if a significant deviation occurs in USD – PKR conversion rate?	Not allowed
61	For the foreign training requirement for CCP, CDCS, ITIL-F and ISMS, as all of these trainings & certifications are available in Karachi, the trainings / certifications will not require any travelling, boarding or lodging in Karachi. Is it necessary to host these trainings outside Pakistan?	as per BOQ



DATA CENTER BOARD OF REVENUE



DATA CENTER HYDRABAD

Existing Ceiling Height 12'-0"
Proposed False Ceiling Height 10'-0"

No. -10-PMU/BOR/2012/1242

PROJECT MANAGEMENT UNIT
BOARD OF REVENUE SINDH
Dated: 10-01-2013

Received today on 16/01/2013

M/s. Zehra Communications Pvt. Ltd.,
503, Marine Point, DC-1, Block 9,
Clifton, Karachi

SUBJECT: **LETTER OF ACCEPTANCE**

CTO Zehra Com Pak

This is to notify that your bid dated 21-12-2012 for "Procurement and Installation (Complete Solution) of Data Center, Disaster Recovery Center and Infrastructure Development of 27 Facilitation Centers, one at each District of Sindh Province for LARMIS on turnkey basis" at the total bid price of Rs. 596,325,478 /- (Rupees Five Hundred and Ninety Six Million, Three Hundred and Twenty Five Thousand, Four Hundred and Seventy Eight only) for mandatory Bill of Quantities (BOQs) as per schedule of requirement specified in the RFP/bid document, has been accepted by the competent authority.

You may accordingly come forward to submit performance guarantee at 5% of contract price and sign formal contract agreement.

Project Director
Project Management Unit
Board of Revenue, Sindh

No. CEF-A

SINDH PUBLIC PROCUREMENT REGULATORY AUTHORITY

CONTRACT EVALUATION FORM

TO BE FILLED IN BY ALL PROCURING AGENCIES FOR PUBLIC CONTRACTS OF WORKS, SERVICES & GOODS WORTH 50 MILLION (PKR) OR ABOVE

1) NAME OF THE ORGANIZATION / DEPTT **Project Management Unit, Board of Revenue, Sindh**

2) PROVINCIAL/ LOCAL GOVT. / OTHER **Provincial Government**

3) TITLE OF CONTRACT **"Establishment of Data Center, Disaster Recovery Center and ICT Infrastructure Development of 27 Property Records Facilitation Centers for Sindh"**

4) TENDER NUMBER **3709/12**

5) BRIEF DESCRIPTION OF CONTRACT To house the entire computerized revenue record of Sindh Province, a Data Center alongwith backup facility linked with 27 Facilitation Centers including equipping of the Facilitation Centers with necessary ICT Infrastructure, i.e. Hardware Software was required.

6) FORUM THAT APPROVED THE SCHEME (Why the procurement was necessary?) Provincial Development Working Party (PDWP)

7) TENDER ESTIMATED VALUE **Rs. 650 MILLION**

8) ENGINEER'S ESTIMATE (For civil works only) **Rs. N/A**

9) ESTIMATED COMPLETION PERIOD (AS PER CONTRACT) **04 Months**

10) TENDER OPENED ON (DATE & TIME) **21-12-2012 at 03:30 PM**

11) NUMBER OF TENDER DOCUMENTS SOLD **Twenty (20)**
(Attach list of buyers)

12) NUMBER OF BIDS RECEIVED **Three (03)**

13) NUMBER OF BIDDERS PRESENT AT THE TIME OF OPENING OF BIDS **Three (03)**

14) BID EVALUATION REPORT (Enclose a copy) **24th December' 2012**

15) NAME AND ADDRESS OF THE SUCCESSFUL BIDDER **M/s. Zehra Communications Pvt. Ltd., 503, Marine Point, DC-1, Block 9, Clifton, Karachi**

16) CONTRACT AWARD PRICE **Rs. 596,325,478/-**

17) RANKING OF SUCCESSFUL BIDDER IN EVALUATION REPORT (i.e. 1st, 2nd, 3rd EVALUATION BID). **1st**

18) METHOD OF PROCUREMENT USED : - (Tick one)

a) SINGLE STAGE – ONE ENVELOPE PROCEDURE _____ [ ]

b) SINGLE STAGE – TWO ENVELOPE PROCEDURE _____ [√]

c) TWO STAGE BIDDING PROCEDURE _____ [ ]

d) TWO STAGE – TWO ENVELOPE BIDDING PROCEDURE _____ [ ]

- PLEASE SPECIFY IF ANY OTHER METHOD OF PROCUREMENT WAS ADOPTED i.e. EMERGENCY, DIRECT CONTRACTING / NEGOTIATION ETC. WITH BRIEF REASONS:

19) APPROVING AUTHORITY FOR AWARD OF CONTRACT **GOVERNOR SINDH THROUGH SENIOR MEMBER BOARD OF REVENUE SINDH**

20) WHETHER THE PROCUREMENT WAS INCLUDED IN ANNUAL PROCUREMENT PLAN?

Yes	√	No	

21) ADVERTISEMENT :

i) PPRA Website (Federal Agencies)
(If yes, give date and PPRA's tender number)

Yes	√. **The advertisement was hoisted on SPPRA website on 29- 09-2012 vide tender No. 9599/2012 at Sr. No. 13985**
No	

ii) News Papers
(If yes, give names of newspapers and dates)

Yes	**Daily Dawn (29-09-2012)** **Daily Jang (29-09-2012)**

22) NATURE OF CONTRACT

Local	√	Int.	

23) WHETHER QUALIFICATION CRITERIA WAS INCLUDED IN BIDDING / TENDER DOCUMENTS?
(If yes, enclose a copy)

Yes	√	No	

24) WHETHER BID EVALUATION CRITERIA WAS INCLUDED IN BIDDING / TENDER DOCUMENTS?
(If yes, enclose a copy)

Yes	√	No	

25) WHETHER APPROVAL OF COMPETENT AUTHORITY WAS OBTAINED FOR USING A METHOD OTHER THAN OPEN COMPETITIVE BIDDING?

Yes		No		N/A	√

26) WAS BID SECURITY (EARNEST MONEY) OBTAINED FROM ALL THE BIDDERS?

Yes	√	No	

27) WHETHER THE SUCCESSFUL BIDDER WAS LOWEST EVALUATED BIDDER?

Yes	√	No	

28) WHETHER THE SUCCESSFUL BIDDER WAS TECHNICALLY COMPLIANT?

Yes	√	No	

29) WHETHER INTEGRITY PACT WAS SIGNED?
(If yes, enclose a copy)

Yes	√	No	

30) WHETHER NAMES OF THE BIDDERS AND THEIR QUOTED PRICES WERE READ OUT AT THE TIME OF OPENING OF BIDS?

Yes	√	No	

31) WHETHER COPY OF EVALUATION REPORT GIVEN TO ALL BIDDERS?
(Attach copy of the bid evaluation report)

Yes	√	No	

32) ANY COMPLAINTS RECEIVED
(If yes, result thereof)

Yes	
No	√

33) ANY DEVIATION FROM SPECIFICATIONS GIVEN IN THE TENDER NOTICE / DOCUMENTS
(If yes, give details)

Yes	
No	√.

34) WAS THE EXTENSION MADE IN RESPONSE TIME?
(If yes, give reasons)

Yes	√. Due to complexity of the assignment, a large number of queries were received from bidders. In response BOR conducted pre-bid meeting and timely clarified all the queries. However, for incorporation of clarified changes & impending 'ashora' holidays, requests made by firms were considered to allow equal opportunity to all firms in response time.
No	

35) DEVIATION FROM QUALIFICATION CRITERIA
(If yes, give details)

Yes	
No	√

36) WAS IT ASSURED BY THE PROCURING AGENCY THAT THE SELECTED FIRM IS NOT BLACK LISTED?

Yes	√	No	

37) WAS A VISIT MADE BY ANY OFFICER/OFFICIAL OF THE PROCURING AGENCY TO THE SUPPLIER'S PREMISES IN CONNECTION WITH THE PROCUREMENT? IF SO, DETAILS TO BE ASCERTAINED REGARDING FINANCING OF VISIT, IF ABROAD:
(If yes, enclose a copy)

Yes		No	√

38) WERE PROPER SAFEGUARDS PROVIDED ON MOBILIZATION ADVANCE PAYMENT IN THE CONTRACT (BANK GUARANTEE ETC.)?

Yes		No		N/A	√

39) SPECIAL CONDITIONS, IF ANY
(If yes, give Brief Description)

Yes	
No	√

40) DATE OF AWARD OF CONTRACT
(Attach a copy of agreement)

25th February 2013

Signature & Official Stamp of
Authorized Officer

for

PROJECT DIRECTOR
PROJECT MANAGEMENT UNIT
BOARD OF REVENUE SINDH

FOR OFFICE USE ONLY

Contract

For

Establishment of Data Center, Disaster Recovery Center and Infrastructure Development of 27 Facilitation Centers in Sindh

Contents

CONTRACT FOR SERVICES OF CONTRACTOR

between

Government of Sindh

and

M/s Zahra Communications (Pvt.) Ltd.

Dated: 25-02-2013

27649 189 17,90,000/-

SHAKEEL A. SHAIKH STAMP VENDOR 01 FEB 2013
Licence No. 44, Shop # 30
Clifton Center Block-5 Clifton Karachi.
S. No. 17777 Date ...
Issued to M/s. Zahra Communications (Pvt) Ltd
Through ...
Purpose ...
Value Rs. 1000/- Received ...
Stamp Vendor's Signature ...

I. Form of Contract

THIS AGREEMENT is made at Karachi, this 25th day of February, 2013

BETWEEN

The Governor Sindh through the Project Director PMU, Board of Revenue Sindh, duly authorized by Senior Member Board of Revenue, Sindh having its office at 1st Floor, ST-4, Project Management Unit, Adjacent Ziauddin Hospital, Clifton, Karachi (hereinafter referred to as the **"Government"** and alternatively as the **"Client"**, which expression shall, wherever context so permits, include its successors-in-office, representatives and assigns), of the First Part;

AND

M/s Zahra Communications (Pvt.) Ltd., a private limited company incorporated under the laws of Pakistan having its office at **Room No. 503, Marine Point, DC-1, Block 9, Clifton, Karachi 75600** (hereinafter referred to as the **"Contractor"** and alternatively as the **"Contractor"**, which expression shall, wherever context so permits, include its successors-in-interest, representatives and assigns), of the Second Part.

WHEREAS:

(1) The Purchaser, with the approval of the Government, invited bids for the procurement of services for Establishment of Data Centre, Disaster Recovery Centre and delivery of hardware (as mentioned **Appendix A**) and connectivity 27 Facilitation Centres for Revenue Property Records of Sindh Province serving its various functional areas as specified in **Appendix A.**

(2) The Contractor, in response to the invitation for bids, submitted its bid for the provision of consultancy for Establishment of Data Centre, Disaster Recovery Centre and Facilitation Centres for Revenue Property Records of Sindh Province (on turnkey basis).

(3) The Contractor has agreed to provide to the Purchaser of Goods & Services for Establishment of Data Centre, Disaster Recovery Centre and Property Record Centres for Revenue Property Records of Sindh Province (on turnkey basis), as specified in **Appendix A**, and to provide support and maintenance upon the terms and conditions hereinafter contained.

Board of Revenue Government of Sindh

(3) The Contractor has agreed to provide to the Purchaser of Goods & Services for Establishment of Data Centre, Disaster Recovery Centre and Property Record Centres for Revenue Property Records of Sindh Province (on turnkey basis), as specified in **Appendix A**, and to provide support and maintenance upon the terms and conditions hereinafter contained.

NOW THEREFORE the parties hereto hereby agree as follows:

i. The following documents attached hereto shall be deemed to form an integral part of this Contract:
   - I. The General Conditions of Contract;
   - II. The Special Conditions of Contract;
   - III. The following Appendices:
     - Appendix A: Description of Services
     - Appendix B: Key Personnel
     - Appendix C: Services and Facilities Provided by the Client
     - Appendix D: Performa for Bank Guarantee for Advance Payment
     - Appendix E: 3rd party audit of DC & DRC by epi/uptime or equivalent parameters
     - Appendix F: Reporting Requirements

ii. The mutual rights and obligations of the Client and the Contractor shall be as set forth in the Contract, in particular:
   - a. the Contractors shall supply items and carry out the Services in accordance with the provisions of the Contract; and
   - b. the Client shall make payments to the Contractors in accordance with the provisions of the Contract.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names as of the day and year first above written.

For and on behalf of <THE CLIENT>, Board of Revenue, Government of Sindh

Witness No. 1

Rahim Bux Bugti Deputy Director (F&A)

Witness No. 2

ASIF KARIM S/O ABDUL KARIM

For and on behalf of <THE CONTRACTOR> M/s Zahra Communications (Pvt.) Ltd.

[Authorized Representative]

Witness No. 1

Witness No. 2

JAVED IQBAL - MANAGER ACCOUNTS

I. General Conditions of Contract

1. GENERAL PROVISIONS

1.1. Definitions

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

(a) "Applicable Law" means the laws and any other instruments having the force of law in the Government's country, or in such other country as may be specified in the Special Conditions of Contract (SC), as they may be issued and in force from time to time;

(b) "Acceptance Date" means the date on which the PAT started and site is RFS (ready for Service) is accepted or deemed to be accepted by the Purchaser;

(c) "Area" means the geographical boundary of the Province of Sindh within which the Program Material shall be used;

(d) "Client" means Government of Sindh which will hire the Services from the Contractor under the Contract;

(e) "Contractor" means M/s Zahra Communications (Pvt.) Ltd. which will supply items and carry out the Services to the Client under the Contract;

(f) "Contract" means the Form of Contract signed by the Parties and all the attached documents listed in its Clause 1, that is these General Conditions (GC), the Special Conditions (SC), and the Appendices;

(g) "Contract Price" means the price to be paid for the supply of equipment and performance of the Services, in accordance with Clause 5 (GC) ;

(h) "Delivery Date" means the date on which the items and services shall be delivered and deployed as specified in Appendix A Clause 3;

(i) "Deployment" means deployment and operation of Data Centre, Disaster Recovery Centre and Facilitation centre as per the locations, quantity of items, service and time period mentioned in Appendix A Clause 3;

(j) "Effective Date" means the date on which this Contract comes into force and effect pursuant to Clause GC 2.1;

(k) "Foreign Currency" means any currency other than the currency of the Client's country;

(l) "GC" means these General Conditions of Contract;

(m) "Government" means the Government of Sindh;

(n) "Local Currency" means Pakistani Rupees (PKR);

(o) "Location" means all such premises owned, occupied or operated by the personnel of or, under the authority of the Purchaser in the Area;

(p) "Party" means the Client or the Contractor, as the case may be, and "Parties" means both of them;

(q) "Personnel" means persons hired by the Contractor and assigned to the performance of the Services or any part thereof;

(r) "Program Documentation" means any documentation reduced in eye-readable form by the Contractor and supplied to the Purchaser as deliverable documents specified in Appendix A Clause 2.6;

(s) "Purchaser" means the Client;

(t) "SC" means the Special Conditions of Contract by which the GC may be amended or supplemented;

(u) "Services" means the work to be performed by the Contractor pursuant to this Contract, as described in Appendix A hereto;

(v) "Support and Maintenance Services" means the maintenance of services provided by the Contractor under Appendix A;

(w) "Training" means the users training as specified in Appendix A;

(x) "In writing" means communicated in written form with proof of receipt;

(y) "Works" means all works done or completed including provision of supply & services by the Contractor under the Agreement;

(z) "Warranty" means the warranty of any item provided under the Contract (mentioned in Appendix A Clause 3), time period will be followed as mentioned in RFP.

1.2. Law Governing Contract This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Law.

1.3. Language This Contract has been executed in the language specified in the SC, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract.

1.4. Notices

1.4.1. Any notice, request or consent required or permitted to be given or made pursuant to this Contract shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent to such Party at the address specified in the SC.

1.4.2. A Party may change its address for notice hereunder by giving the other Party notice in writing of such change to the address specified in the SC.

1.5. Location **The Services shall be performed at such locations as are specified in SC.**

1.6. Authority of Member in Charge

In case the Contractor consists of a joint venture/ consortium/ association or any sub-contractor of more than one entity, the Members hereby authorize the entity specified in the SC to act on their behalf in exercising all the Contractor's rights and obligations towards the Client under this Contract, including without limitation the receiving of instructions and payments from the Client.

1.7. Authorized Representatives

Any action required or permitted to be taken, and any document required or permitted to be executed under this Contract by the Client or the Contractor may be taken or executed by the officials specified in the SC.

1.8. Taxes and Duties

The Contractor shall pay such indirect taxes, duties, fees, and other impositions levied under the Applicable Law as specified in the SC, the amount of which is deemed to have been included in the Contract Price.

1.9. Fraud and Corruption

1.9.1.

It is required that the Contractors observe the highest standard of ethics during the selection and execution of such contracts. In pursuance of this policy, the Client ;

(a) Defines, for the purpose of this provision, the terms set forth below shall have the meaning and interpretation as follows:

(i) "Corrupt practice" means the offering, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the selection process or in contract execution;

(ii) "Fraudulent practice" means a misrepresentation or omission of facts in order to influence a selection process or the execution of a contract;

(iii) "Collusive practices" means a scheme or arrangement between two or more Contractors, with or without the knowledge of the Borrower, designed to establish prices at artificial, noncompetitive levels;

(iv) "coercive practices" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract;

1.9.2.

(a) will sanction a Contractor, including declaring the Contractor ineligible, either indefinitely or for a stated period of time, if it at any time determines that the Contractor has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for, or in executing the contract;

1.9.3. Commission and Fees

(b) will require the successful Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents, representatives, or commission agents with respect to the selection process or execution of the contract. The information disclosed must include at least the name and address of the agent, representative, or commission agent, the amount and currency, and the purpose of the commission or fee.

2. COMMENCEMENT, COMPLETION, MODIFICATION AND TERMINATION OF CONTRACT

2.1. Effectiveness of Contract

This Contract shall come into effect on the date the Contract is signed by both Parties and such other later date as may be stated in the SC. The date the Contract comes into effect is defined as the Effective Date.

2.2. Commencement of Services

The Contractor shall begin carrying out the Services not later than the number of days after the Effective Date specified in the SC. The contractor will submit the detailed Project Implementation Plan with contingencies and dependencies not later than ten (10) days after signing of the contract for all deliverables.

2.3. Expiration of Contract

Unless terminated earlier pursuant to Clause GC 2.6 hereof, this Contract shall expire at the end of such time period after the Effective Date as specified in the SC.

2.4. Modifications or Variations

Any modification or variation of the terms and conditions of this Contract, including any modification or variation of the scope of the Services, may only be made by written agreement between the Parties. However, each Party shall give due consideration to any proposals for modification or variation made by the other Party as specified in SC.

2.5. Force Majeure

2.5.1.

For the purposes of this Contract, "Force Majeure" means an event which is beyond the reasonable control of a Party and which makes a Party's performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances.

2.5.2. No Breach of Contract

The failure of a Party to fulfill any of its obligations under the contract shall not be considered to be a breach of, or default under, this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event (a) has taken all reasonable precautions, due care and reasonable alternative measures in order to carry out the terms and conditions of this Contract, and (b) has informed the other Party as soon as possible about the occurrence of such an event.

2.5.3.

Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

2.6. Termination

2.6.1. By the Client

The Client may terminate this Contract in case of the occurrence of any of the events specified in paragraphs (a) through (d) of this Clause GC 2.6.1. In such an occurrence the Client shall give a not less than sixty (60) days' written notice of termination to the Contractor:

(a) If the Contractor does not remedy a failure in the performance of their obligations under the Contract, within sixty (60) days after being notified or within any further period as the Client may have subsequently approved in writing.

(b) If the Contractor becomes insolvent or bankrupt.

(c) If, as the result of Force Majeure, the Contractor are unable to perform a material portion of the Services for a period of not less than sixty (60) days.

(d) If the Parties by their mutual consent and for any reason whatsoever decide to terminate the contract.

2.6.2. By the Contractor

The Contractors may request to terminate this Contract, by not less than thirty (30) days written notice to the Client, such notice to be given after the occurrence of any of the events specified in paragraphs (a) through (b) of this Clause GC 2.6.2:

(a) If the Client fails to pay any money due to the Contractor pursuant to this Contract and not subject to dispute pursuant to Clause GC 7 hereof within thirty (30) days after receiving written notice from the Contractor that such payment is overdue.

(b) If, as the result of Force Majeure, the Contractor is unable to perform a material portion of the Services for a period of not less than sixty (60) days.

2.6.3. Payment Upon Termination

Upon termination of this Contract pursuant to Clauses GC 2.6.1 or GC 2.6.2, the Client shall make the following payments to the Contractor:

(a) payment pursuant to Clause GC 6 for Services satisfactorily performed prior to the effective date of termination;

(b) Reimbursement of any reasonable cost incident to the prompt and orderly termination of the Contract, including the cost of the return travel of the Personnel and their eligible dependents.

3. OBLIGATIONS OF THE CONTRACTOR

3.1. General

3.1.1. Standard of Performance

The Contractor shall perform the Services and carry out their obligations hereunder with all due diligence, efficiency and economy, in accordance with generally accepted professional standards and practices, and shall observe sound management practices, and employ appropriate technology and safe and effective equipment, machinery, materials and methods. The Contractor shall always act, in respect of any matter relating to this Contract or to the Services, as faithful advisers to the Client, and shall at all times support and safeguard the Client's legitimate interests in any dealings third Parties.

3.2. Conflict of Interests

The Contractor shall hold the Client's interests paramount, without any consideration for future work, and strictly avoid conflict with other assignments or their own corporate interests.

3.2.1. Contractor's Not to Benefit from Commissions, Discounts, etc.

The payment of the Contractor pursuant to Clause GC 6 shall constitute the Contractor's only payment in connection with this Contract or the Services, and the Contractor shall not accept for their own benefit any trade commission, discount, or similar payment in connection with activities pursuant to this Contract or to the Services, or in the discharge of their obligations under the Contract, and the Contractor shall use their best efforts to ensure that the Personnel and agents of either of them similarly shall not receive any such

additional payment.

3.2.2. Contractor And Affiliates Not To be Otherwise Interested in Project

The Contractor agrees that, during the term of this Contract and after its termination, the Contractor and any entity affiliated with the Contractor, shall be disqualified from providing goods, works or services (other than consulting services) resulting from or directly related to the Contractor's Services for the preparation or implementation of the project.

3.2.3. Prohibition Of Conflicting Activities

The Contractor shall not engage, and shall cause their Personnel not to engage, either directly or indirectly, in any business or professional activities which would conflict with the activities assigned to them under this Contract.

3.3. Confidentiality

Except with the prior written consent of the Client, the Contractor and the Personnel shall not at any time communicate to any person or entity any confidential information acquired in the course of the Services, nor shall the Contractor and the Personnel make public the recommendations formulated in the course of, or as a result of, the Services.

3.4. Reporting Obligations

(a) The Contractor shall submit to the Client the reports and documents specified in Appendix F hereto, in the form, in the numbers and within the time periods set forth.

(b) All the reports shall be delivered in the form of hard copy and soft copy / optical media

3.5. Documents Prepared by the Contractor

All plans, specifications, designs, reports, other documents and software submitted by the Contractor under this Contract shall, not later than upon termination or expiration of this Contract, deliver all such documents to the Client

CONTRACTOR'S PERSONNEL

3.6. Description of Personnel

The Contractor shall employ and provide such qualified and experienced Personnel as are required to carry out the Services. The titles, agreed job descriptions, minimum qualifications, and estimated periods of engagement in the carrying out of the Services of the Contractor's Key Personnel are described in Appendix B. The Key Personnel listed by title as well as by name in Appendix B are hereby approved by the Client.

3.7. Removal and/or Replacement of Personnel

(a) Except as the Client may otherwise agree, no changes shall be made in the Key Personnel. If, for any reason beyond the reasonable control of the Contractor, such as retirement, death, medical incapacity, among others, it becomes necessary to replace any of the Key Personnel, the Contractor shall provide as a replacement a person of equivalent or better qualifications.

(b) If the Client finds that any of the Personnel have (i) committed serious misconduct or have been charged with having committed a criminal action, or (ii) have reasonable cause to be dissatisfied with the performance of any of the Personnel, then the Contractor shall, at the Client's written request specifying the grounds

thereof, provide as a replacement a person with qualifications and experience acceptable to the Client.

(c) The Contractor shall have no claim for additional costs arising out of or incidental to any removal and/or replacement of Personnel. The replacement will be made in consultation and approval with the Client. Contractor shall provide at least three CVs of equivalent qualification and experience of the replacement.

4. OBLIGATIONS OF THE CLIENT

4.1. Assistance and Exemptions The Client shall use its best efforts to ensure that the Government shall provide the Contractor such assistance and exemptions as specified in the SC.

4.2. Change in the Applicable Law Related to Taxes and Duties If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost incurred by the Contractor in performing the Services, then the remuneration and reimbursable expenses otherwise payable to the Contractor under this Contract shall be increased or decreased accordingly by agreement between the Parties, and corresponding adjustments shall be made to the amounts referred to in Clauses GC 6.2 (a) or (b), as the case may be.

4.3. Services and Facilities The Client shall make available free of charge to the Contractor the Services and Facilities listed under SC.

5. PAYMENTS TO THE CONTRACTOR

5.1. Lump-Sum Payment The total payment due to the Contractor shall not exceed the Contract Price which is an all-inclusive fixed lump-sum covering all costs required to carry out the Services described in Appendix A. Except as provided in Clause 4.2, the Contract Price may only be increased above the amounts stated in Clause 5.2 if the Parties have agreed to additional payments in accordance with Clause 2.4.

5.2. Contract Price

(a) The price payable in foreign currency/currencies is set forth in the SC.

(b) The price payable in local currency is set forth in the SC.

5.3. Payment for Additional Services For the purpose of determining the remuneration due for additional services as may be agreed under Clause 2.4.

5.4. Terms and Conditions of Payment Payments will be made in favor of Contractor and according to the payment schedule stated in the SC.

6. GOOD FAITH

6.1. Good Faith The Parties undertake to act in good faith with respect to each other's rights under this Contract and to adopt all reasonable measures to ensure the realization of the objectives of this Contract.

7. SETTLEMENT OF DISPUTES

7.1. Amicable Settlement

The Parties agree that the avoidance or early resolution of disputes is crucial for a smooth execution of the Contract and the success of the assignment. The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.

7.2. Dispute Resolutions

Any dispute between the Parties as to matters arising pursuant to this Contract that cannot be settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement may be submitted by either Party for settlement in accordance with the provisions specified in the SC.

8. SECURITIES

8.1. Performance Security

(a) The Contractor shall, within fifteen (15) days of the signing of Contract, provide a security for the due performance of the Contract in the amount and currency specified in the SC.

(b) The security shall be a performance guarantee in the form prescribed by the Client (i.e. bank guarantee, pay order).

(c) The security shall automatically become null and void after 90 days to the completion of the contract.

9. GUARANTEES AND LIABILITIES

9.1. Defect Liability

The Contractor warrants that the System shall be free from defects in the design, and workmanship of the Hardware for Data Center, Disaster Recovery Center and Facilitation Centers. Exceptions and/or limitations, if any, to this warranty with respect to Software (or categories of Software), shall be as specified in the SC. Commercial warranty provisions of products supplied under the Contract shall apply to the extent that they do not conflict with the provisions of this Contract one year after the all warranties expires.

9.2.

The Warranty Period shall commence from the date of User Acceptance of the operationalized Data Center, Disaster Recovery Center and Facilitation Centers (or of any major component) and shall extend for the length of time specified in the SC.

9.3

If during the Warranty Period any defect as described in GC Clause 9.1 should be found in the design and workmanship of the Information Technologies and other Goods supplied or of the Services provided by the Contractor, the Contractor shall promptly, in consultation and agreement with the Client provide appropriate remedy of the defects, and at its sole cost, repair, replace, or otherwise make good (as the Contractor shall, at its discretion, determine) such defect as well as any damage to the System caused by such defect.

9.4.

The Contractor shall not be responsible for the repair, replacement, or making good of any defect of any damage to the System arising out of or resulting from any of the following causes:

(a) An operation by the client against the provided guideline of the Contractor;

(b) Normal wear and tear in all items provided under this contract;

(c) Use of the System with items not supplied by the Contractor, unless otherwise identified in the Technical Requirements, or approved by the Contractor; or

(d) Modifications made to the System by the Client, or a third party,

27649 159 17,90,000/-

500 Rupees

PAKISTAN 10000R SPECIAL ADHESIVE

PAKISTAN 10000R SPECIAL ADHESIVE

PAKISTAN 10000R SPECIAL ADHESIVE

PAKISTAN 10000R SPECIAL ADHESIVE

PAKISTAN 10000R SPECIAL ADHESIVE

PAKISTAN 10000R SPECIAL ADHESIVE

PAKISTAN 10000R SPECIAL ADHESIVE

06 MAR 2013

SHAKEEL A. SHAIKH STAMP VENDOR 01 FEB 2013

S. No. 17777 Date ... Issue to with Address M/s. Zahra Communications (Pvt) LTD

Through with Address ...

Purpose ...

Value ... Attached ...

Stamp Vendor's Signature ...

I. Form of Contract

THIS AGREEMENT is made at Karachi, this 25th day of February, 2013

BETWEEN

The Governor Sindh through the Project Director PMU, Board of Revenue Sindh, duly authorized by Senior Member Board of Revenue, Sindh having its office at 1st Floor, ST-4, Project Management Unit, Adjacent Ziauddin Hospital, Clifton, Karachi (hereinafter referred to as the **"Government"** and alternatively as the "**Client**", which expression shall, wherever context so permits, include its successors-in-office, representatives and assigns), of the First Part;

AND

M/s Zahra Communications (Pvt.) Ltd., a private limited company incorporated under the laws of Pakistan having its office at **Room No. 503, Marine Point, DC-1, Block 9, Clifton, Karachi 75600** (hereinafter referred to as the **"Contractor"** and alternatively as the "**Contractor**", which expression shall, wherever context so permits, include its successors-in-interest, representatives and assigns), of the Second Part.

WHEREAS:

(1) The Purchaser, with the approval of the Government, invited bids for the procurement of services for Establishment of Data Centre, Disaster Recovery Centre and delivery of hardware (as mentioned **Appendix A**) and connectivity 27 Facilitation Centres for Revenue Property Records of Sindh Province serving its various functional areas as specified in **Appendix A.**

(2) The Contractor, in response to the invitation for bids, submitted its bid for the provision of consultancy for Establishment of Data Centre, Disaster Recovery Centre and Facilitation Centres for Revenue Property Records of Sindh Province (on turnkey basis).

(3) The Contractor has agreed to provide to the Purchaser of Goods & Services for Establishment of Data Centre, Disaster Recovery Centre and Property Record Centres for Revenue Property Records of Sindh Province (on turnkey basis), as specified in **Appendix A**, and to provide support and maintenance upon the terms and conditions hereinafter contained.

Board of Revenue Government of Sindh

(3) The Contractor has agreed to provide to the Purchaser of Goods & Services for Establishment of Data Centre, Disaster Recovery Centre and Property Record Centres for Revenue Property Records of Sindh Province (on turnkey basis), as specified in **Appendix A**, and to provide support and maintenance upon the terms and conditions hereinafter contained.

NOW THEREFORE the parties hereto hereby agree as follows:

i. The following documents attached hereto shall be deemed to form an integral part of this Contract:
   - I. The General Conditions of Contract;
   - II. The Special Conditions of Contract;
   - III. The following Appendices:
     - Appendix A: Description of Services
     - Appendix B: Key Personnel
     - Appendix C: Services and Facilities Provided by the Client
     - Appendix D: Performa for Bank Guarantee for Advance Payment
     - Appendix E: 3rd party audit of DC & DRC by epi/uptime or equivalent parameters
     - Appendix F: Reporting Requirements

ii. The mutual rights and obligations of the Client and the Contractor shall be as set forth in the Contract, in particular:
   - a. the Contractors shall supply items and carry out the Services in accordance with the provisions of the Contract; and
   - b. the Client shall make payments to the Contractors in accordance with the provisions of the Contract.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names as of the day and year first above written.

For and on behalf of <THE CLIENT>, Board of Revenue, Government of Sindh

Witness No. 1

Rahim Bux Bugti Deputy Director (F&A)

Witness No. 2

ASIF KARIM S/o ABDUL KARIM

For and on behalf of <THE CONTRACTOR> M/s Zahra Communications (Pvt.) Ltd.

[Authorized Representative]

Witness No. 1

Witness No. 2

JAVED IQBAL - MANAGER ACCOUNTS

I. General Conditions of Contract

1. GENERAL PROVISIONS

1.1. Definitions

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

(a) "Applicable Law" means the laws and any other instruments having the force of law in the Government's country, or in such other country as may be specified in the Special Conditions of Contract (SC), as they may be issued and in force from time to time;

(b) "Acceptance Date" means the date on which the PAT started and site is RFS (ready for Service) is accepted or deemed to be accepted by the Purchaser;

(c) "Area" means the geographical boundary of the Province of Sindh within which the Program Material shall be used;

(d) "Client" means Government of Sindh which will hire the Services from the Contractor under the Contract;

(e) "Contractor" means M/s Zahra Communications (Pvt.) Ltd. which will supply items and carry out the Services to the Client under the Contract;

(f) "Contract" means the Form of Contract signed by the Parties and all the attached documents listed in its Clause 1, that is these General Conditions (GC), the Special Conditions (SC), and the Appendices;

(g) "Contract Price" means the price to be paid for the supply of equipment and performance of the Services, in accordance with Clause 5 (GC) ;

(h) "Delivery Date" means the date on which the items and services shall be delivered and deployed as specified in Appendix A Clause 3;

(i) "Deployment" means deployment and operation of Data Centre, Disaster Recovery Centre and Facilitation centre as per the locations, quantity of items, service and time period mentioned in Appendix A Clause 3;

(j) "Effective Date" means the date on which this Contract comes into force and effect pursuant to Clause GC 2.1;

(k) "Foreign Currency" means any currency other than the currency of the Client's country;

(l) "GC" means these General Conditions of Contract;

(m) "Government" means the Government of Sindh;

(n) "Local Currency" means Pakistani Rupees (PKR);

(o) "Location" means all such premises owned, occupied or operated by the personnel of or, under the authority of the Purchaser in the Area;

(p) "Party" means the Client or the Contractor, as the case may be, and "Parties" means both of them;

(q) "Personnel" means persons hired by the Contractor and assigned to the performance of the Services or any part thereof;

(r) "Program Documentation" means any documentation reduced in eye-readable form by the Contractor and supplied to the Purchaser as deliverable documents specified in Appendix A Clause 2.6;

(s) "Purchaser" means the Client;

(t) "SC" means the Special Conditions of Contract by which the GC may be amended or supplemented;

(u) "Services" means the work to be performed by the Contractor pursuant to this Contract, as described in Appendix A hereto;

(v) "Support and Maintenance Services" means the maintenance of services provided by the Contractor under Appendix A;

(w) "Training" means the users training as specified in Appendix A;

(x) "In writing" means communicated in written form with proof of receipt;

(y) "Works" means all works done or completed including provision of supply & services by the Contractor under the Agreement;

(z) "Warranty" means the warranty of any item provided under the Contract (mentioned in Appendix A Clause 3), time period will be followed as mentioned in RFP.

1.2. Law Governing Contract This Contract, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Law.

1.3. Language This Contract has been executed in the language specified in the SC, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract.

1.4. Notices

1.4.1. Any notice, request or consent required or permitted to be given or made pursuant to this Contract shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent to such Party at the address specified in the SC.

1.4.2. A Party may change its address for notice hereunder by giving the other Party notice in writing of such change to the address specified in the SC.

1.5. Location **The Services shall be performed at such locations as are specified in SC.**

1.6. Authority of Member in Charge

In case the Contractor consists of a joint venture/ consortium/ association or any sub-contractor of more than one entity, the Members hereby authorize the entity specified in the SC to act on their behalf in exercising all the Contractor's rights and obligations towards the Client under this Contract, including without limitation the receiving of instructions and payments from the Client.

1.7. Authorized Representatives

Any action required or permitted to be taken, and any document required or permitted to be executed under this Contract by the Client or the Contractor may be taken or executed by the officials specified in the SC.

1.8. Taxes and Duties

The Contractor shall pay such indirect taxes, duties, fees, and other impositions levied under the Applicable Law as specified in the SC, the amount of which is deemed to have been included in the Contract Price.

1.9. Fraud and Corruption

1.9.1.

It is required that the Contractors observe the highest standard of ethics during the selection and execution of such contracts. In pursuance of this policy, the Client ;

(a) Defines, for the purpose of this provision, the terms set forth below shall have the meaning and interpretation as follows:

(i) "Corrupt practice" means the offering, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the selection process or in contract execution;

(ii) "Fraudulent practice" means a misrepresentation or omission of facts in order to influence a selection process or the execution of a contract;

(iii) "Collusive practices" means a scheme or arrangement between two or more Contractors, with or without the knowledge of the Borrower, designed to establish prices at artificial, noncompetitive levels;

(iv) "coercive practices" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract;

1.9.2.

(a) will sanction a Contractor, including declaring the Contractor ineligible, either indefinitely or for a stated period of time, if it at any time determines that the Contractor has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for, or in executing the contract;

1.9.3. Commission and Fees

(b) will require the successful Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents, representatives, or commission agents with respect to the selection process or execution of the contract. The information disclosed must include at least the name and address of the agent, representative, or commission agent, the amount and currency, and the purpose of the commission or fee.

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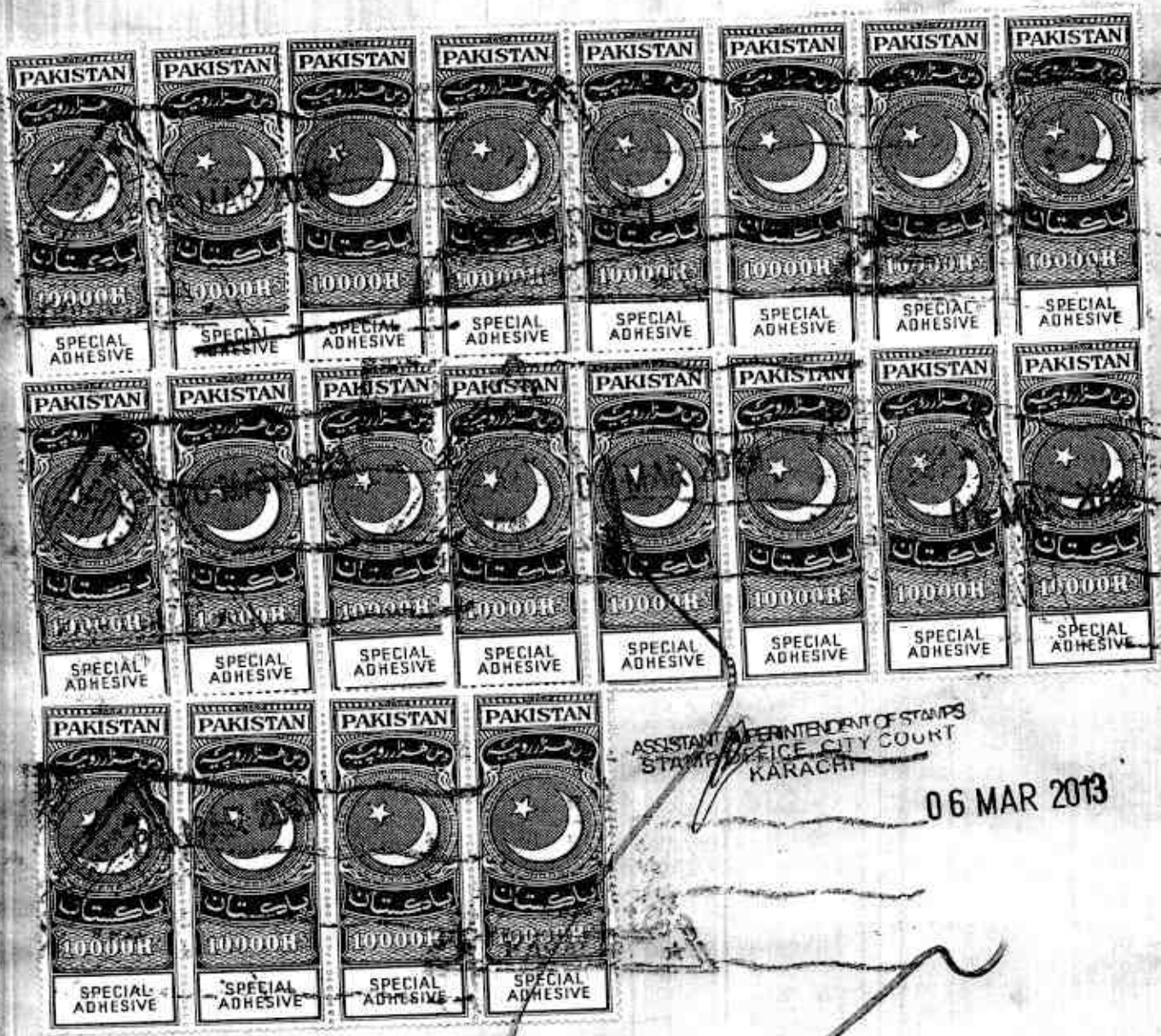

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KARACHI

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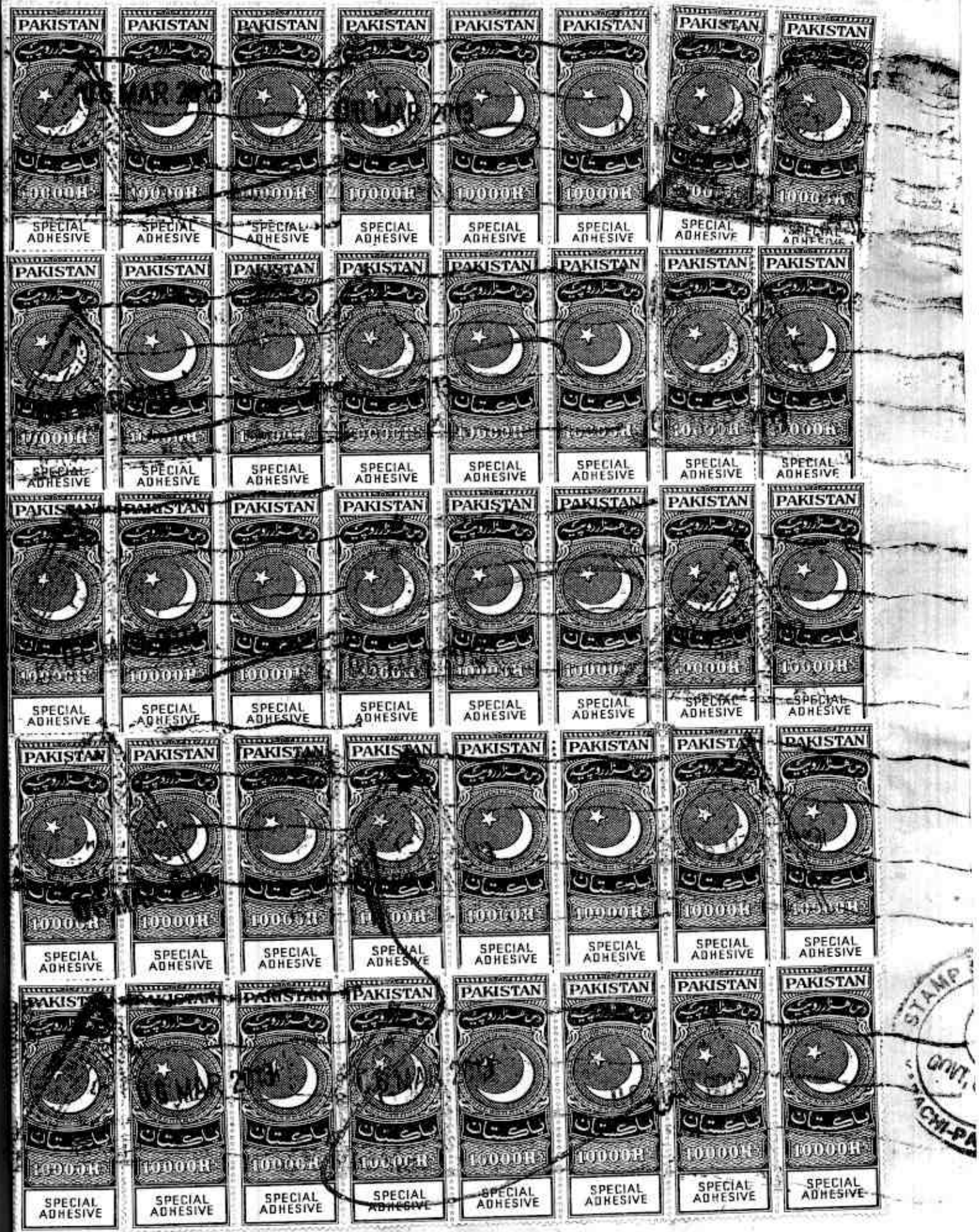
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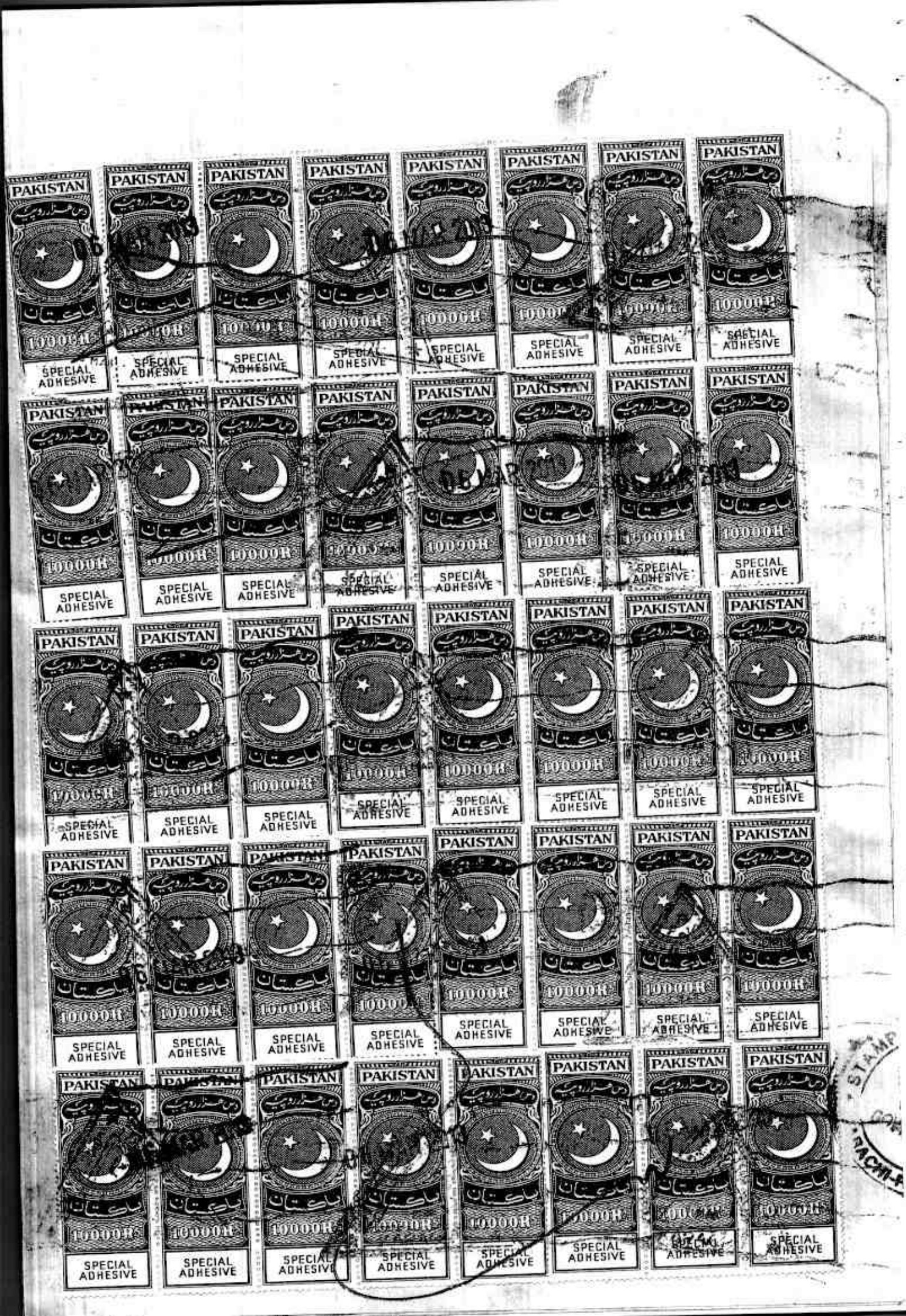
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SHAKEEL A. SHAIKH-S/V
CNIC 42301-5325922-1
CLIFTON TOWN, KARACHI.

29 JAN 2013
HUSSIAN ABBASI
Ex-Officio Vendor

not approved by the Contractor.

9.5. The Client shall give the Contractor a written notice promptly following the discovery of a defect, stating the nature of any defect together with all available evidence. The Client shall afford all reasonable opportunity for the Contractor to inspect any such defect. The Client shall afford the Contractor all necessary access to the System and the site to enable the Contractor to perform its obligations under this GC Clause 9.

9.6. The Contractor may, with the consent of the Client, remove from the site any Information Technologies and other Goods that are defective, if the nature of the defect, and/or any damage to the System caused by the defect, is such that repairs cannot be expeditiously carried out at the site.

9.7. If such part fails the tests, the Contractor shall carry out further repair, replacement, or making good (as the case may be) until that part of the System passes such tests. The tests shall be agreed upon by the Client and the Contractor.

10. COPYRIGHT

10.1. The Intellectual Property Rights in all Standard Software and Standard Items shall remain vested in the owner of such rights as specified in SC.

11. SOFTWARE LICENSE AGREEMENTS

11.1 The Contractor hereby grants to / arranges the Client license to access and use all the hardware, Software, including all inventions, designs, and marks embodied in the Software.

Such license to access and use the Software shall:

(a) be:

(i) nonexclusive;

(ii) fully paid up and irrevocable;

(iii) valid throughout the territory of the Province of Sindh;

(b) permit the Software to be:

(i) used on or with the hardware for which it was acquired (if specified in the Technical Requirements and/or the Contractor's bid), plus a backup hardware of the same or similar capacity, if the primary is(are) inoperative, and during a reasonable transitional period when use is being transferred between primary and backup;

(ii) if the nature of the System is such as to permit such access, accessed from other computers connected to the primary and/or backup computer(s) by means of a local or wide-area network or similar arrangement, and used on or copied for use on those other computers to the extent necessary to that access;

(iii) reproduced for safekeeping or backup purposes;

(iv) configured, adapted, or combined with other computer software for use by the Client, provided

that software incorporating any substantial part of the delivered, restricted Software shall be subject to same restrictions as are set forth in this Contract;

(v) as **specified in the SC,** disclosed to, and reproduced for use by, support service Contractors and their sub-Contractors, dsto the extent reasonably necessary to the performance of their support service contracts, subject to the same restrictions as are set forth in this Contract;

II. Special Conditions of Contract

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
1.2.	The Laws of Pakistan.
1.3.	English.
1.4.	The addresses are: **Contractor:** Name: M/s Zahra Communication (private) Limited Contact Number:+92-21-111-123-124 Fax Number: +92-21-35837126 Address: : Suit No. 503, Marine Point, DC-1, Clifton Road, Karachi Email: ceo@zahracom.net **Client:** Name: Project Management Unit, Board of Revenue, Government of Sindh Address: 1st Floor, ST-4, Project Management Unit, Adjacent Ziauddin Hospital, Clifton, Block 6, Karachi Tel. No. :+92-21-99251370 Fax No.:+92-21-99251373
1.5.	Location as specified in Appendix A hereto.
1.7.	The Authorized Representatives are: For the Client: **Name:** Project Director, PMU (BOR) **Contact Number:** +92-21-99251370 **Address:** 1st Floor, ST-4, Project Management Unit, Adjacent Ziauddin Hospital, Clifton, Karachi For the Contractor: **Name:** CEO Zahra Communication **Contact Number:**+92-21-111-123-124 **Fax Number:** +92-21-99251883 **Address:** : Suit No. 5033, Marine Point, DC-1, Clifton Road, Karachi **Email:** utehsin@zahracom.net Each signatory hereto represents and warranty to the other that he or she is the appointed representative of the party on whose behalf he or she has signed this Agreement and has

	the actual and unconditional authority and is duly authorized to sign for and bind that party.
1.8.	Income Tax shall be deducted from each payment made to the Contractor as per Income Tax Rules and Regulations prescribed by Government of Pakistan. Each party shall be liable for its own taxes. The prices quoted by the Contractor in its financial proposal will be considered inclusive of all applicable taxes.
2.1.	The Effective Date is the date of signing of the Contract.
2.2.	15 days.
2.3.	12 months from the date of commencement of operationalization of DR, DRC and FCs.
2.4.	This Contract sets forth the complete and exclusive agreement of the parties regarding the subject matter of this Contract and supersedes all prior agreements, understandings and communications, oral or written, between the Parties regarding the subject matter of this Contract. In the event of any one or more of the provisions of this Contract shall for any reason be held invalid, illegal or unenforceable, the remaining provisions of this Contract shall be unimpaired and the invalid, illegal and unenforceable provision(s) shall be replaced by mutually acceptable provision(s), which being valid, legal and enforcement come(s) nearest to the intention of the Parties. It is acknowledged and agreed that this Contract constitutes the legal, valid and binding obligation between the Parties hereto and shall be binding upon each Party's respective, successors and assign. This Contract may not, in whole or in part, be modified or terminated on the basis of any negotiation or discussion between the Parties and no release here under shall be effective except by the means of a written instrument executed and approved by the Parties. No failure or delay by either Party in exercising any rights, power or privilege under this Contract shall operate as a waiver of such right, power or privilege, nor shall any single or partial exercise of that right, power or privilege preclude any other to future exercise thereof.
3.3	The Contractor and its respective affiliates and subsidiaries and the client officers/officials, Contractors etc. shall keep confidential and not disclose, publish, sell, trade or disseminate in any manner to any third party any technical information, data, business or trade secrets, other proprietary information or other similar information ("Confidential Information") provided by a Party during and after the course of this agreement without written consent from other Party. The Confidential Information is the exclusive property of the Party providing the same and if possible, shall be returned to the respective party or if permitted copies exist, destroyed upon termination of this Agreement. The Confidential Information shall not be used by the Contractor for its benefit during and after the course of this Agreement.
4.3.	The Client shall help the Contractor by providing: 1. Access to deployment sites as and when requested by the Contractor 2. Presence of trainees on training sites as per agreed schedule. 3. Provide a temporary room for Project Office at both Data Center & Disaster Recovery Site (subject to the availability). The Client will approve following: 1. Passive material in respect of Civil & Electromechanical works. 2. Layout of Data Center & Disaster Recovery Site 3. All types of design relating to infrastructure and IT fabric (LLD/HLD/SLD).

5.1	Payments for deliverables and training of PMU (BOR) staff shall be based on actual quantity of data and unit price fixed according to payment clause 5.4.
5.2	**A. The contract price:** **Foreign Currency: N/A** **For local currency: Rs. 596,325,478/-** **Five Hundred Nine Six Million Three Twenty Five Thousand Four Hundred and Seventy Eight Rupees only. In case of any discrepancy in the payments, financial proposal shall prevail.**
5.4.	**Advance Payment:** An amount equivalent to 15% of the total cost of the contract will be paid against the provision by the Contractor of an Advance Payment Guarantee of the same amount acceptable to the Client in the form set forth in Appendix D. The advance payment guarantee shall be valid up to expiry of this contract. The advance payment shall be adjusted proportionately from the subsequent invoices of the Contractor. Client shall issue a certificate for the release of advance payment bank guarantee proportionately as 2deducted by Client from the subsequent invoices of the Contractor. All other payment shall be made after the conditions listed in the table below for each payment has been met, the Contractor has submitted an invoice to the Client specifying the amount due and the Client has accepted the deliverable/work done. Mobilization advance will be deducted on each invoice equal to the percentage of invoice raised by the client.
7.2.	All disputes arising between the Parties hereto as to any matter or thing arising from or in any manner connected with this Contract shall be referred to arbitration in Karachi in accordance with the Arbitration Act 1940 or any amendment or re-enactment thereof, to be conducted by sole Arbitrator to be appointment by the mutual consent of the Parties hereto. The Arbitrators' decision shall be final and binding on all the Parties.
9.2.	Warranty period shall as mentioned in RFP be valid from the date of delivery or as provided by the principals, whichever is higher.
10.1	Government of Sindh has full rights to use all the hardware & software in any number of users and anywhere but limited within the Province of Sindh. Contractor shall not re-distribute the any item, provided under this contract, to any other entity.
11.1(b)(v)	After the fully functional Data Center, Disaster Recovery Center & Facilitation Center, the Contractor will provide all the licenses to the client.
11.2	After the completion of fully functional Data Center, Disaster Recovery Center & Facilitation Center, the Contractor will fully facilitate client to integrate LARMIS application & GIS application with their respective vendors.
	3rd party audit parameters for DC & DR by epi/uptime or equivalent where applicable (as mention in Appendix E).

APPENDIX A – DESCRIPTION OF GOODS & SERVICES

1. DEFINITIONS

When used in this Agreement and in each Appendix issued hereunder, the capitalized terms listed below shall have the following meanings:

"OBJECT CODE" means the machine-readable form of the Code.

"SOFTWARE AND MATERIALS" means the all the Deliverables mentioned in Appendix B and any other materials produced for delivery of software and delivery of services under this contract including Design Documents, Installation Manual and User Manual.

"DELIVERABLES" means all items and services, Documentation, developed for or delivered to the Client by the Contractor under BOQ of this Agreement.

"DOCUMENTATION" means Requirements Specifications, Installation Guide and user Manual.

"ERROR" means any failure of the Program(s) to conform on any material respect to its or their published specifications.

"ERROR CORRECTION" means either a modification or addition that, when made or added to the Program(s), brings the program(s) into material conformity with its or their published specifications, or a procedure or routine that, when observed in the regular operation of the program(s), avoids the practical adverse effect of such nonconformity.

"RELEASES" means new versions of the Program(s), which may include Error Corrections and/or Enhancements by Manufacturer (if any).

"SERVICES" means the consulting services for Land Record Management and Information System (LARMIS) and includes the activities, commitments, responsibilities and obligations of the Contractor mentioned in this Appendix A clause 3

"IN WRITING" means through letter or fax.

"ITEMS" means all types of hardware or accessories relating to the establishment of Data Center, Disaster Recovery Center and Facilitation Center as mentioned in BOQ under this agreement.

Any term not defined herein shall have the same meaning as is normal and standard in the software development an information technology industry.

2. SCOPE OF WORK

Project Scope of Work

The Purchaser is now seeking the services of a Contractor to build Redundant Data Centres in Karachi and Hyderabad and provide 2 Mbps Data Connectivity over terrestrial link between the Data Centre at Karachi and DR facility at Hyderabad for a period of six (6) months on Redundant Fault Tolerant Network and 512 kbps Data Connectivity over terrestrial link between the Data Centre at Karachi, DR facility at Hyderabad and the District Facilitation Centres at each of the 27 Districts in Sindh for a period of six (6) months on Redundant Fault Tolerant Network between the Data Centre in Karachi, DR facility in Hyderabad and the 27 Property Record Centres/Customer Facilitation Centres. The Contractor would also supply components of the ICT Infrastructure required at the 27 Property Record Centres/Customer Facilitation Centres as mentioned in Appendix A (BOQ). The entire project is expected to be completed in four (04) months (excluding the warranty & support) after the award of the contract.

The following components have to be provided:

1. **Data Centre at Karachi:**

The Contractor would build a Data Centre facility at Board of Revenue, Project Management Unit Office near adjacent to Ziauddin Hospital in Karachi. An area has been allocated for the Data Centre. The Contractor shall construct the Data Centre facility as per the requirement and as listed in the BoQ. The

Civil Works include modification of the Data Centre facility with Equipment Area, Electrical Room, Staging Area, Meet-Me Rooms, NOC and other required spaces. The quantities are measured and stated in the BoQ. The Bidder shall bid on the quantities provided. Detailed working drawings would be approved with selected contractor's feedback and measurements would be applied on contract rates. The scope of work also includes installing the required Data Centre Infrastructure to include Data Cabinets, Data Cabling and other components BoQ in full compliance with TIA-942/EPI / UPTIME or equivalent (where applicable as per BOQ) recommendations, , this include N+1 redundant HVAC system, N+1 redundant power system to include Power Cabling. UPS, Power Conditioners, LT Switchgear and Standby Power Generation System as detailed in the BoQ.

Moreover any or all of optional items included in the RFP may also be included within ambit of scope of this contract agreement as per bid of the contractor after technical assessment of requirement and by mutual consensus between client and the contractor subject to the approval from P&D Department or availability of the funds.

2. **Disaster Recovery Facility at Hyderabad:**

The Contractor would build a Disaster Recovery Facility at Board of Revenue offices in Hyderabad. An area has been allocated for the Disaster Recovery Facility. The Contractor shall construct the Data Centre facility as per the requirement and as listed in the BoQ. The Civil Works include modification of the existing area for the facility. The quantities are measured and stated in the BoQ. The Bidder shall bid on the quantities provided. Detailed working drawings would be approved with selected contractor's feedback and measurements would be applied on contract rates. The scope of work also includes installing the required Data Centre Infrastructure to include Data Cabinets, Data Cabling and other components in full compliance with TIA-942 /EPI / UPTIME or equivalent (where applicable as per BOQ), this include N+1 redundant HVAC system, N+1 redundant power system. UPS, Power Conditioners, LT Switchgear and Standby Power Generation System as detailed in the BoQ.

3. **ICT Infrastructure at Data Centre and Disaster Recovery Facility:**

A robust ICT Infrastructure is planned for the requirement of Purchaser. The Components of the ICT Infrastructure are:

i. Blade Servers
ii. SAN Storage
iii. Backup and Recovery Software Solution
iv. Data Centre Core Switches
v. Data Centre Access Switches
vi. MPLS Routers
vii. Firewall and IPS
viii. Network Monitoring and Network Fault Management Solution
ix. Vulnerability Assessment, Threat Management and Anti-Virus Solution
x. NOC Solution

4. **Connectivity:**

The contractor would arrange for terrestrial connectivity for the 27 x District Property Record Centres/Customer Facilitation Centres to be connected to the Data Centre and Disaster Recovery Facility as specified in BoQ

5. **ICT Infrastructure Component at the 27 District Property Record Centres/Customer Facilitation Centres:**

The Contractor would supply components for the 27 District Property Record Centres/Customer Facilitation Centres as detailed in the BoQ.

6. **Mandatory Trainings**

The Contractor would provide training to the Purchaser's team as per the requirements laid out in Section 0 and BoQ listed in Section 7.1.4

7. **Operations Support**

The Contractor would provide Operations Support for the Data Centres team as per the requirements laid out in the BoQ listed in Section 7.1.5

8. **Professional Services**

Professional Services would be provided as per BoQ in Sections 7.1.6

Bill of Quantities (BoQ)

- The Bill of Quantities includes the description of the items/services and the quantities required.
- Bidders shall bid their solutions based on the details and quantities specifically mentioned in the BoQ. Any omissions or differences would be accounted for at the time of the Contract.
- The Purchaser reserves the right to delete any component from the BoQ at the time of Contract and to increase or decrease the quantity of any BoQ item.
- The Bidder shall submit detailed drawings based on which solution has been offered. Working drawings would be finalized in consultation with the Contractor and any quantities would be adjusted accordingly based on bided rates.
- The bidder shall in their Technical and Commercial Bid shall provide detailed part numbers of the components offered. Lot/Lump Sum pricing without listing the detailed part numbers and all options. offered would not be acceptable. Bidder shall also submit all data sheets for all the components offered.
- The offer shall include turnkey implementation and configuration of all components supplied for the Data Centres including but not limited to labelling in strict compliance with ANSI/TIA/EIA 606A of all components installed. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Purchaser.
- Genuine software licenses authorised by Principal for this project for the Purchaser's organization must be supplied. Any attempt to supply counterfeit, illegal software license will result in Blacklisting of the Bidder.

Bill of Quantities includes following the items and services:

Data Centre at Karachi

S.No.	Requirement	Qty	Unit
1	Supply and Installation of Precision Milled Anti-Static Vinyl Tile Flooring made of High Density Resin with Conductive Carbon matrix. Should comply with ANSI S20.20 recommendations for Anti-Static Flooring.	1640	ft^2
2	Supply and Installation of 24" x 24" Anti-Static Carpet Tile with tufted textured loop construction with a yarn weight of 18 oz/yd^2, 8 stitches per inch and pile height of 0.12". Should have stain protection and have Helix 44 Denier conductive fiber twisted into every tuft creating 100 conductive contact points per square inch. Static charges shall be ionized at the surface and conducted directly to ground through the static dissipative vinyl backing and conductive adhesive system. Should comply with ANSI S20.20 recommendations for Anti-Static Flooring. Should meet ASTM E-648 Class 1 flammability requirements.	850	ft^2
3	Providing and Fixing of Anti-Static Static Dissipative Epoxy Flooring using Self-Levelling Epoxy Flooring System 2mm – 3mm thick.	760	ft^2
4	Supply and fixing on imported .7 mm Dampa ceiling including necessary components with Aluminium powder coated hangers, adjusters, wires etc. and provision of opening for lights etc.	850	ft^2
5	Supply and painting of 3 x coats of paint on new or old work such as walls and ceiling including all detached attachments with alkali resistant acrylic based paint upto 3 mm thick including surface preparation with putty filling.	8440	ft^2

6	Supply and Fixing of 12mm imported Tampered Glass including Edging and Fitting laminated with shatter resistant clear sheet with silicon filling and rubber beads and spider fittings etc as required.	280	ft^2
7	Supply and Installation of Fire resistant Data Centre steel doors to include vision panels and shall have options for latched or unlatched operations. The doors shall be powder coated and shall have suitable hinges made of Stainless Steel frame and all installation and locking accessories. The door shall be two leaf with height of 8' and total width of 6'	1	№
8	Supply and Installation of Electric Operated Automatic Glass Bi Parting Sliding Door Mechanism with electronic computerised DC motor and built in optical sensor for precise movement. Motorized Mechanism shall be housed in extruded Aluminium Low Profile transom sections. The pelmet shall incorporate integrated interlocking hinge for secure closure. Shall be fitted flush to the ceiling. The Door Panels shall be 12mm Tempered Glass 10' High and 4' Wide each. The multifunctional microprocessor control unit shall fully compensate door weight and friction therefore delivering the optimum force for efficient operation. Shall have provision for full interfacing with all types of building security/alarm systems. Shall have Open speed control, Closing speed control, Brake control: preventing the doors from slamming shut, End Position-damping control for accurate slow down of door movement, Built-in UPS (uninterrupted power supply) for continued operation of door under power failure. The tracking system is to be dual linear track fitted with anti rise wheels with no possibility of doors disengaging off tracks. The upper track shall be made of harder and stronger alloy and be replaceable. Each□track wheel is fitted with track wipers to maintain clean contact. Moving doors shall automatically reverse when traveling in either □direction, if obstructed, sensitivity setting to be programmable. During a power failure or emergency the Failsafe device will fully open the doors. The failsecure mode will close and secure the doors until power is restored. Door drive shall be by way of toothed belt reinforced with fiberglass tensile members, will incorporate nylon facing surface for pulley tooth protection, for silent and service free operation.□Actuation shall be one of the following:- Microwave sensors, Flush mounted sensors, Passive infra red sensors, Fine line sensors, Induction loops, Remote control transmitters□and Key card system. Shall support door weight of upto 240 kg.	1	№
9	Laying and Installation of Genset Foundation Pad 8' x 16' on existing RCC Floor after laying 2" thick cork sheet and then laying 6" thick RCC pad with ½" Ø steel reinforcement 6" apart.	2	№
10	Supply of High Quality Reception Desk 120" x 30" x 30" (H) with Melamine/Glass Top Finish and matching modular three drawer unit with casters.	1	№
11	Supply of High Quality Desk 168" x 30" x 30" (H) with Melamine/Glass Top Finish and matching modular three drawer unit with casters for 5 people.	3	№
12	Supply of High Quality Filing Cabinet in lamination finish 20" x 36" x 30" (H) with single shelf and double shutter complete with hardware.	4	№
13	High quality officer's hydraulic chairs with tilt function, leather or premium fabric upholstery with adjustable arms. Client approval required before final delivery	18	№
14	Visitor Chairs matching with the Officer Chairs without	4	№

	casters and hydraulics		
15	Two Seat Sofa Sets with back in Leatherette Finish 60" x 30" x 18" (H)	3	№
16	Supply, installation and commissioning of Hi-Voltage Electric Fence for Perimeter Security on boundary walls and gates of the facility. The electric fence should deter intruders with a Hi-Voltage but Non-Lethal Electric Shock and should be capable raising alarm if tampered besides sending SMS alerts. The proposed solution shall be trunk-key and come complete with Backup Battery, Terminal Rods, End Insulators, Pull Rods, Brackets & Clamps etc. as well as Copper Grounding Rod, Lightning Arresters as required. A warning plate shall be fitted at regular intervals and at every point where persons may gain easy access to the electrified conductors. Total perimeter wall length is 400feet with two 12 feet wide, double entry gates. The specification of the fence energizer will be in accordance with IEC 60335-2-76 International Standard: 1. Peak value of voltage must be above 8kV, but not exceeding 10kV. 2. Maximum energy delivered to a load of 500Ω must not be less than 7.5 Joule. Minimum interval between impulses should not be less than 1.0 s. 3. Maximum impulse duration must be 50ms. 4. In order to provide optimum protection against lightning, all energizers must be installed in a dedicated lockable room inside the access control building. 5. No energizers must be installed in the field, in huts or outside panels along the perimeter fence. 6. The energizer must have its own standby DC power and should be programmable for multiple zones. All conductor wires must be manufactured from Aluminum for its very good corrosion resistance characteristics and low electrical resistance, and withstand saline atmospheric conditions. The Aluminum conductor wires must be pulled in position with a maximum force not exceeding 25Kg but not less than 20 kg to prevent wedging through or controlled electrical pass to defeat alarm. HT cables used to connect the energizer output connectors to the fence wires should have single inner conductor of Aluminum (same material composition as the Aluminum fence wires) to prevent galvanic corrosion. The Insulation material of HT cable should be UV (Ultraviolet) stabilized to withstand prolonged UV exposure. The fence wire and the High Voltage cable should be connected with suitable Aluminum crimp ferrules manufactured have the same material composition as the fence wire and the High Voltage cables. The insulators should be made from a UV resistant material.	1	№

	The insulator surface should not be damaged by flash over. The insulators should retain their rated mechanical strength over the temperature range of -10°C to +60°C. The insulators should not become brittle or soft under any ambient temperature conditions. The insulator should be designed such that the fence wire cannot be disengaged from them once installed. The insulators should demonstrate a minimum arcing voltage of 20kV when applied between the mounting screw and fence wire soaked with a 2 % saline solution. Strain insulators when fastened to a fixed point with its standard attachment screw, must withstand a pulling force of 300kg at 45 °C when applied to a 2.24mm steel wire attached to the insulator. A non-metallic, UV stabilized tensioning device should be used to tension the electric fence wires. The tensioning devices should be able to withstand at least five times the maximum installed wire tension of 20kg. The tensioning device should allow for the accurate tensioning of the fence wires to the required tension.		
17	Supply and Installation of 42U Free Standing Equipment Cabinets housing 19 inch wide equipment in compliance with EIA-310-D standard; with a cabinet size of atleast 600 mm Width x 1100 mm Depth. The mounting bar can be adjusted from the front or rear and two power distribution units (PDUs) can be vertically installed at the rear of each cabinet. Shall be configured with wheel and leveling feet used for quick movement and installation. The cabinets shall include front and rear doors and side panels. The ventilation rate between the front door and the rear door is greater than or equal to 70%. The opening angle of the door body is greater than or equal to 110 degrees. The cabinet shall be made of high-intensity class A carbon cold rolled steel sheet with thickness of 1.2 mm (0.05 in.) to 2.0 mm (0.08 in.). The cabinets shall have 2,000 lbs. static load rating. Shall be EIA Standard 19" Rack Mount Width to include four adjustable #12-24 threaded mounting rails with RMU markings. Should include lockable removable solid metal side panels and dual hinged perforated metal front and rear doors with keyed swing handle latch. Top Panel should be removable and shall include 4 x Fans for Air Flow Management and support top and bottom cable entry. Cabinet should be fully electrically bonded. Cabinet should include vertical cable managers on each side with 3" of cable capacity per side, 2 x Horizontal Cable Managers. The cabinet should include grounding strip across its height with jumper cable to connect to the grounding network. Each front door and back door shall be configured with two temperature sensors. Each back door is configured with one door status sensor. The cabinets shall comply with RoHS standard. Each cabinet shall include two pairs of equipment mounting rails. Mounting rails shall bolt to the supports located near the top, middle and bottom of the frame and shall be fully adjustable in depth to provide front and rear support for equipment. Equipment Mounting Rails shall be spaced horizontally to support 19" (482.6 mm) wide EIA-310-D compliant rack-mount equipment and shall provide up to 39" (990 mm) of rail-to-rail depth for equipment. Mounting rails will be L-shaped. The front flange shall be square-punched according to the EIA-310-D Universal hole pattern with equipment mounting holes on alternating 5/8" – 5/8" – 1/2" (15.9 mm – 15.9 mm – 12.7 mm) vertical hole centres.	14	№

	Square-punched holes shall accept cage nut hardware with various threads. Rack mount spaces or units (RMU) shall be 1-3/4" (44.45 mm) high and shall be marked and numbered on the mounting rails. Numbering shall start at the bottom of the rail. Mounting rails shall provide 42 RMU for equipment. Each installed cabinet shall be equipped with a vertical cable manager to store network cables. The vertical cable manager shall attach to the side of the cabinet frame in the space between the frame and the side panel and shall be adjustable in depth to match equipment requirements. The vertical cable manager shall be a U-shaped trough with cable ports along the rear of the manager. The vertical cable manager shall have cable openings along the side that align with each RMU space on the mounting rail. The openings shall be sized to allow 24 patch cords to enter each RMU space. The cable openings shall be separated by plastic T-shaped cable guides to route cables into each RMU space. Each installed cabinet shall be equipped with two horizontal U-shaped cable trays that will connect the vertical cable managers at the front and rear of the cabinet. The trays shall be located along the side of the cabinet frame in between the front and rear vertical cable managers positioned near the top and middle of the cable managers. The trays shall be designed to adjust in depth to match the depths of the front and rear vertical cable managers. Each Cabinet shall be securely bonded to the Telecommunications Grounding Busbar (TGB). Attach a bonding conductor sized as defined in J-STD-607-A between the Telecommunications Grounding Busbar and the cabinet. Attach the bonding conductor to the cabinet using included hardware according to the manufacturer's installation instructions. The installer shall provide the bonding conductor and other necessary hardware required to make the connections between the cabinet and the Telecommunications Grounding Busbar. The cabinet shall include (4) leveling feet, (4) clamps for securing the leveling feet to the floor, a baying kit, and a means for bonding the cabinet to the Telecommunications Grounding Busbar. (12 x Cabinets would be installed in Data Centre IT Room and 2 x Cabinent in the Staging Area)		
18	Supply and Installation of Hot Aisle Containment Solution for the 12 of the cabinets provided as S. No. 17. The Aisle Containment Solution of modular data center shall consist of end doors and ceilings. The structure shall be prefabricated and shall to comply with fire safety requirements; The end door of a containment solution can be a sliding door or a double door. Ceilings of the containement shall be flat roof ceilings, consisting of side panels, top frames, and revolving ceiling panels. The revolving ceiling panel shall be connected to the top frames through fuse link dowel pins and installed horizontally. In case of fire, the fuse shall be blown and the revolving ceiling panel shall automatically open because of gravity so that Fire Suppression Gas can be spread into the aisle. The Containment Solution shall also integrate the UPS and Inrow Cooling Units to be supplied by the Contractor. External through requirements: Plenty of cable plackets on the top and bottom of the cabinet to support the upper route and underside route both. Signal cable troughs and Power	1	Solution

	cable troughs are necessary. The lengths of both are extendable, and they route signal cables and power cables respectively. Cable holes are located in the center of each cabinet top cover to simplify cable-routing into the cabinet. When a power cable and a signal cable cross, they are routed from different channels. Holes for binding cables are located at the joints of between the skylight ceiling and the cabinets. The Containment Solution shall include Cable Troughs for Data and Power Cables as necessary including all accessories for Horizontal Cable Management		
19	Supply and Installation of Rack-Mount 0U PDU with Power Monitoring, 3 Phase 50Hz/16A IEC60309 Input, 18 x IEC 60320/C13 Outputs and 6 x IEC 60320/C19 Outputs with Ethernet/SNMP Monitoring and Built-In Display for RMS Current Monitoring for each Output and fuses/breakers for branch circuit protection together with any mounting accessories to mount 2 x PDUs in cabinets.	28	№
20	Supply and Installation of Telecommunications Main Grounding Busbar (TMGB) which shall be constructed of .25" (6.4 mm) thick solid copper bar and shall be 4" (100 mm) high and 20" (510 mm) long and shall have 30 attachment points (two rows of 15 each) for two-hole grounding lugs with a hole pattern for attaching grounding lugs shall meet the requirements of ANSI-J-STD – 607-A and shall accept 27 lugs with 5/8" (15.8 mm) hole centers and 3 lugs with 1" (25.4) mm) hole centers. The busbar shall include wall-mount standoff brackets, assembly screws and insulators creating a 4" (100 mm) standoff from the wall.	2	№
21	Supply and Laying of Category 6 (Should support 10 Gbps Ethernet with minimum Alien Crosstalk) 4-Pair UTP Copper Cable with HDPE insulation meeting ANSI/TIA/EIA-568-C requirements. Conductors are twisted in pairs and should include integrated pair divider and placed in a flame retardant PVC jacket. Cable should be laid on pre-installed cable trays in bunches of 12 cables using cable ties at every 3 - 5 feet or ducts/conduits supplied by the Contractor. Cable Bunches should be properly labelled at both ends and at every 50 ft. interval using proper Adhesive Labels (Thermal Transfer or superior labels). Laying should be as per details shown in drawings. Contractor is responsible to cater for all installation supplies/tools. Each Roll would be in length of 305m/1,000 ft.	6	Rolls
22	Supply and Installation of 48-Port Cat-6 (Should support 10Gbps Ethernet) UTP Patch Panels (Preferably Angular Patch Panels) to meet ANSI/TIA/EIA-568-C Category 6 and ISO 11801 2nd Edition Class E Standards. Should meet requirements for IEEE 802.3at PoE Plus requirements. Should terminate 4-pair 22-26AWG, 100 Ω solid or stranded twisted pair cable. Should utilize 110 punch down termination on back panel and include retention cap for each port. Should mount to standard EIA 19" rack. Each port should be properly labelled using Adhesive Labels or Label Inserts for Port and Panel Identification. (Thermal Transfer or superior labels). Should include Cable Strain Relief Bars with integrated clips or cable tie clips providing support and bend radius protection to each individual cable to be installed with the Patch Panels	4	№
23	Supply and installation of Cat-6 (Shall support 10Gbps Ethernet) UTP Jack Modules to meet ANSI/TIA/EIA-568-C Category 6 and ISO 11801 2nd Edition Class E Standards and IEEE 802.3at PoE Plus requirements. Jack Termination should maintain cable pair geometry and eliminate conductor	48	№

	untwist. Contact should be gold plated and should support termination of 4-pair 22-26AWG , 100 Ω solid or stranded twisted pair cable. Construction should be such that no punch down tool should be required for termination. Strain relief termination cap should be provided. The module should accept 6 and 8 position modular plugs. The jack modules should be installable with single gang One Module/Port, 2 Module/Port or 4 Module/Port Face Plates. Modules and Faceplates should be individually labelled using Adhesive Labels (Thermal Transfer or superior labels) as per TIA/EIA-606-A Standard. The module should be mounted with a Single Gang Face Plate and any mounting accessories should be provided. Jack Block out Insets should be provided for all modules. Modules Should be Snapped In and Face Plates should be Off-White, Ivory or Stainless Steel Finish. Face Plate shall have come with Blank, Snap On cover where Jack Module is not installed. Face Plate shall have space for 1 Jack Module		
24	Supply and Installation of Cat-6 UTP Patch Cords to meet ANSI/TIA/EIA-568-C Category 6 and ISO 11801 2nd Edition Class E Standards. Should meet requirements for IEEE 802.3at PoE Plus requirements. Patch Cords should be labelled at both ends using TIA/EIA-606-A complaint standard adhesive cable labels (Thermal Transfer or superior technology). Length: 2m.	100	№
25	Supply and Installation of 24 Port Rack-Mount OFC Patch Panel with Pigtails, ST connectors and all accessories for 12 x Multimode Cable and 12 x Single mode Cable. End to End OTDR/OLT Testing with Certified Test equipment Certified hard copies of Optical Loss Testing report should be provided on completion of post-installation of all individual fibre strands in both directions for the wavelengths 850nm, 1300nm, 1310nm, & 1550nm for both SM & MM Fibre.	2	№
26	Supply and Installation of 12 Core Single Mode Type OS2 OFC Cable to be laid in permanently lubricated HDPE Telecom Ducts together with jointing kits and any other accessories that may be required. End to End OTDR/OLT Testing with Certified Test equipment Certified hard copies of Optical Loss Testing report should be provided on completion of post-installation of all individual fibre strands in both directions for the wavelengths 850nm, 1300nm, 1310nm, & 1550nm for both SM & MM Fibre.	150	ft
27	Supply and Installation of 2-core Single mode Type OS2 Ruggedized Patch Cords ST to ST 1m	30	№
28	Supply and Installation of 2-core Multi mode Type OM2 Ruggedized Patch Cords ST to ST 1m	30	№
29	Supply and Installation of Properly Grounded UL Rated 2' Wide Cable Runway	1700	ft
30	Supply and Installation of 1 x Telecom Racks with Double Side 12" Vertical Cable Manager on Either Side of the Rack. Racks shall be Free Standing Relay Racks and shall be manufactured from aluminium and/or steel extrusions. Each rack shall have two L-shaped top angles, two L-shaped base angles and two C-shaped equipment-mounting channels. The rack shall assemble with bolt hardware. Equipment-mounting channels will be threaded for easy assembly. The base angles will be pre-punched for attachment to the floor. Equipment mounting channels shall be 3" deep and punched on the front and rear flange with the EIA-310-D Universal hole pattern to provide 45 rack-mount spaces for equipment. Each mounting space shall be marked and numbered on the mounting	1	Solution

	channel. When assembled with top and bottom angles, equipment-mounting channels shall be spaced to allow attachment of 19" EIA rack-mount equipment. Attachment points shall be threaded with 12-24 roll-formed threads. The rack shall include assembly and equipment-mounting hardware. Each rack will include 50 each combination pan head, pilot point mounting screws. The assembled rack shall measure 7' (84") high, 24.3" wide, and 15" deep. The sides (webs) of the equipment-mounting channels shall be punched to allow attachment of vertical cable managers along the sides of the rack or for rack-to-rack baying. The rack will be rated for 1,500 lb. of equipment.		
52	Supply, Rigging, Installation, Testing and Commissioning of Air Cooled approx. 30 kW Inrow Precision Air Conditioning Units with the manufacturer's recommended low noise air cooled condenser units for ambient of over 45° C. Should include heater, humidifier, condensate pump, Remote Rack Sensors, LCD Display, Web/SNMP Monitoring, Networking Capability to network units in N+1 configuration, Smoke Sensor, Hot Gas Bypass, Reheat and Humidity Lockout. The Inrow Unit shall be Digital Scroll, Direct Expansion Type with complete internal redundancy and shall be manufactured specifically for Data Centre applications. All control and monitoring software shall be provided. The refrigerant shall be eco-friendly and shall not be prohibited or discouraged by any Convention/ Protocol/ Agreement to which Pakistan is a signatory. The unit shall have Digital Scroll, which shall modulate and adapt in reaction to the IT equipment's requirements cutting down on start/stop cycling and working with a very high return air temperature shall maximize cooling capacity and increase efficiency. Precision Air Conditioning System shall control the temperature to 22°C ± 1°C and relative humidity to 48% ± 2%. The solution shall be designed for SHR > 85%. It shall have Microprocessor controls with auto-restart on power failure Alarm volt-free contacts for BMS interface, routine to allow run and standby configuration. Some other features to be shown through the microprocessor are Dirty Filter, Low Temperature, High Temperature, Smoke Detection, High Humidity, Low Humidity, High Head Pressure, Low Suction Pressure, Sensor Failure, Loss of Air Flow. It shall have synchronization feature to rotate between 3 x Active and 1 x Standby units based on Environment, Duty Cycle, Maintenance/Running Status and Schedule. Units should have temperature and humidity Control Based on a Set Point which can be Set by the User Interface. Possibility of Setting a Double Temperature set-Point (both in Cooling and Heating) and Humidity Set Point (both in Dehumidification and Humidification) which can be Set Remotely. Units shall include complete Alarm Detection System. Historical Alarm Event Storage. Alarm Signal Contacts which can be Set on the User Interface. Should be capable of Automatic Restart when Power Returns after a Cut Out. Should display Operating Hour Counter and the number of inrush Currents of the Main Components. Graphic Display with Icons Displaying the State of the Unit Components and Showing all of the Values Read by the Probes Connected to the Control Board. Should have the Possibility of Controlling	3	№

	and Managing the Operation and Parameters of the Electronic Thermostatic Valve. In particular the Operation of the Valve can be Checked and can be Modified in Order to Maximize the General Operation of the Circuit or to Correct any Eventual Malfunctions, the Evaporating Pressure/Temperature can be Monitored and therefore the Unit Operation can be Checked. The Possibility of Selecting Forced Timed Flushing of the Humidifier if the Water Quality is not High. The Contractor shall supply, install, test and commission Refrigerant Pipes (Liquid + Gas) for Precision A/C units with expanded rubber foam Insulation in PVC Conduit (Class D), Flushing, Gas Charging, Hangers, Support and Brackets, complete in all respect and ready to operate. To include manufacturer's recommended size Cu Pipe in insulation, Dura Duct and Manufacturer recommended Gas Charging. For safety and support of Refrigerant pipes, it must be enclosed in trays. The Contractor shall also supply and install 1" UPVC Condensate Drain Water Piping and Fittings with Insulation to the designated sump and 1" UPVC Water Piping and Fittings for Humidifier from the designated water source. The refrigerant piping, drain piping and humidifier piping shall be up to 100'. The Contractor shall submit a detail Air Balancing Report after witness by the Purchaser's designated representative of the Precision A/C units.		
53	Supply, Rigging, Installation, Testing and Commissioning of 12 kW, Air Flow (8,500 – 8,700) m^3/hr, Precision Air Conditioning Units Precision Air Conditioning System shall control the temperature to 22°C ± 1°C and relative humidity to 48% ± 2%. The solution shall be designed for SHR > 85%; > 50 Air Changes per Hour and > 500 cfm/tone. The Precision Air Conditioners (Computer Room A/Cs) should be front discharge type with full function air cooled close control. The Precision Air Conditioners shall have redundant condensers. The units shall incorporate the following: a. Individually belt driven fan/motor assembly b. Electronically commutated backward curved centrifugal fans c. F7 (EU7) high efficiency disposable air filters including filter pressure switch d. Cooling - DX: Cu/Al DX Evaporator Coil with Thermal Expansion Valve, Filter Drier, Solenoid Valve and Sight Glass, tandem scroll compressor arranged in VF energy saving configuration. e. Heating: electric heating f. Humidification: Electrode boiler humidifier g. Control and Accessories: Microprocessor controls with auto-restart on power failure Alarm volt-free contacts for BMS interface, routine to allow run and standby configuration. Some other features to be shown through the microprocessor are Dirty Filter, Low Temperature, High Temperature, Smoke Detection, High Humidity, Low Humidity, Leak Detection, High Head Pressure, Low Suction	2	№

	Pressure, Sensor Failure, Loss of Air Flow h. Compressor: Air Cooled Compressor with Cu/Al DX Condensing Coil, Mains isolator, Axial Flow Fans and Unit matched legs to allow horizontal or vertical mounting of condenser. Energy Efficient Scroll Type. Smooth and even compression. Low noise level. Hermetic Design. Suction Gas Cooling. Internal Oil Management. Internal motor protection including evaluation unit. Maintenance-free. High Efficiency. Indifferent to Malfunctions. i. Ethernet (IP, SNMP, Web) interface Card connected to the main controller Units should have temperature and humidity Control Based on a Set Point which can be Set by the User Interface. Possibility of Setting a Double Temperature set-Point (both in Cooling and Heating) and Humidity Set Point (both in Dehumidification and Humidification) which can be Set Remotely. Units shall include complete Alarm Detection System. Historical Alarm Event Storage. Alarm Signal Contacts which can be Set on the User Interface. Should be capable of Automatic Restart when Power Returns after a Cut Out. The Contractor shall supply, install, test and commission Refrigerant Pipes (Liquid + Gas) for Precision A/C units with expanded rubber foam Insulation in PVC Conduit (Class D), Flushing, Gas Charging, Hangers, Support and Brackets, complete in all respect and ready to operate. To include manufacturer's recommended size Cu Pipe in insulation, Dura Duct and Manufacturer recommended Gas Charging. For safety and support of Refrigerant pipes, it must be enclosed in trays. The Contractor shall also supply and install 1" UPVC Condensate Drain Water Piping and Fittings with Insulation to the designated sump and 1" UPVC Water Piping and Fittings for Humidifier from the designated water source. The refrigerant piping, drain piping and humidifier piping shall be up to 100'. The Contractor shall submit a detail Air Balancing Report after witness by the Purchaser's designated representative of the Precision A/C units.		
54	Supply and Installation of Ceiling Cassette Type Air Conditioner with remote controller and plasma filter (990 cfm, 40,000 BTU/Hr) with R410A Refrigerant and Condensate Pump. Should include capability to provide status, on/off and temperature control to the BMS using Modbus or other standard interface. Should include capability to provide status, on/off and temperature control to the BMS using Modbus or other standard interface.	9	№
55	Supply and Installation of Air Curtain (4' wide) without Controller and Filter.	2	№
56	Supply and Installation of Exhaust Fans (200 cfm) with J Type Duct.	2	№
57	Supply, Laying, Installation, Testing and Commissioning of 4 -Core 70 mm^2 PVC/PVC LT Flame Retardant Flexible Cable to be laid in ducts/trays as required. Should also include 88 x Lugs, 22 x Boots, 22 x Brass Glands and heat shrink sleeves for the supplied cable as required	200	m

58	Supply, Installation, Testing and Commissioning of 4 - Core 16 mm^2 Flexible Flame Retardant PVC Cable 600/1000 Volts grade laid in ducts/trays as required. Should also include Lugs, Boots, Brass Glands and heat shrink sleeves for the supplied cable as required	60	m
59	Supply, Installation, Testing and Commissioning of 1 - Core 6 mm^2 Flexible Flame Retardant PVC Cable 600/1000 Volts grade laid in already installed cable tray or PVC ducting – Green Color for Earthing. Should also include Lugs, Boots, Brass Glands and heat shrink sleeves for the supplied cable as required	100	m
60	Supply, Installation, Testing and Commissioning of 5 - Core 6 mm^2 PVC/XLPE Flame Retardant Flexible Cable laid in already installed cable tray or PVC ducting. Should also include Lugs, Glands for the supplied cable as required	100	m
61	Supply, Installation, Testing and Commissioning of 3 - Core 2½ mm^2 PVC/PVC Flame Retardant Flexible Cable laid in already installed cable tray or PVC ducting	100	m
62	Supply, Installation and Commissioning of 60 kW Modular UPS in N+1 Parallel Redundant Configuration (60kW is the actual load; additional modules would be required for N+1 configuration). The UPS shall include Battery Bank to provide a minimum of 30 minutes backup at full load installed in matching battery cabinets. The UPS solution shall include System Tie Panel to connect all UPS Modules. The offered solution shall have capability for 50% expansion (additional 40kW in N+1 configuration) in the future. The offered solution shall include Integrated System Bypass Module, Maintenance Bypass, Input Circuit Breaker and provision for Emergency Power Off (EPO) together with manufacturer's recommended EPO switch. The UPS shall be True Online Double Conversion True Sinewave type. Each UPS Module shall have built-in Synchronizing/ Parallelizing Technology, Ethernet Interface with Web/SNMP for remote monitoring. The offered solution shall include software for Management, Monitoring and Logging. All accessories for turnkey installation and commissioning should be included. The UPS shall be for three phase 380V – 415V 50Hz input and shall have tolerance of ± 3Hz on Frequency and ± 10% on voltage with an Output Voltage Variation of no more than ±2% and a Short Circuit Capacity of at least 2000A for 250ms. The UPS shall have internal back feed protection and shall support an overload of 125%. The UPS shall have Double Conversion Topology and load should be transferred to inverter in case of power failure in less than 2 msec. The UPS shall have efficiency of up to 95% at nominal load. The UPS have low input current harmonics with THD(i) of 3 – 5% in nominal load conditions. The UPS shall be Transformer free with IGBT Rectifier supporting adjustable power walk-in, adjustable input current limits, adaptive input current limitation and load step limitation. The UPS shall have Maintenance Bypass. The UPS shall have active front-end rectifier. The UPS shall have digital self-diagnostics to prevent system failures and shall have Automatic transfer to bypass or battery power. The UPS shall have Microprocessor controlled Battery Management feature to hold batteries at intelligently rest rather than on float most of the time to prevent corrosion in the battery electrolyte and to automatically check batteries for accurate failure protection. The UPS shall support Automatic Temperature compensation for batteries to adjust VRLA charging voltage according to temperature by decreasing voltage as the temperature	2	Sets (each N+1 60kW solution is one set)

	increases. The UPS shall support Paralleling and Synchronising for true N+1 redundant configuration with independent load sharing and NO single point of failure due to communication of single UPS module failure. The redundancy shall NOT be with a Master-Slave configuration. All Batteries shall be Valve Regulated Lead Acid (VLRA) type and shall be Maintenance Free type with no need for topping-up of water or electrolyte during its service life. Batteries offered shall have a minimum design life of ten (10) years at 20 °C and shall be UL Certified have Absorbent Glass Mat Separator and shall be in a Flame Retardant, Leak and Spill Proof Container. Batteries shall have a very low internal resistance of less than 6 mΩ when fully charged at 25 °C and shall be able to withstand a Short Circuit Current of 2500A. Batteries shall support an operating temperature range of 0 °C to 50 °C and shall have a Nominal Voltage of 12 V. Battery Cabinets shall provide adequate protection (in the form of MCCB, Relays etc.) from Overcharging, Excess Voltage, Excess Current, Excess Heat and Earth Leakage. Battery Cabinets shall provide provision for Fire/Smoke Detector and Air Quality Sensors to be mounted in the Cabinets and connected to the BMS System.		
63	Supply and Installation of 3 Phase 150 kVA Microprocessor based Line Conditioner offering Voltage to include Digital Voltage Stabilizer for an input voltage of 3PH+N 380/220 or 400/230 VAC selectable with a range of ± 20% (from 3x 285V up to 3x 500V L - L) providing an output voltage of 3PH+N 380/220 or 400/230 VAC with an accuracy of ± 0.5%, input and output circuit breakers, Isolation Transformer providing complete galvanic isolation between the mains and the load obtained with a Delta/Zigzag input isolation transformer, Class 1 Transient Voltage Surge Suppressor/Arrestor for Lightning Currents, Class 2 Transient Voltage Surge Suppressor/Arrestor for Service Over Voltages, EMI Filter (100 dB in 10kHz to 10 GHz frequency range) and a manual change-over maintenance bypass switch, disconnecting switch with fuses and a multi-task digital network analyser providing information regarding the status of the line downstream the voltage stabiliser, such as phase and linked voltages, current, power factor, active power, apparent power, reactive power, etc. The Digital Voltage Stabiliser shall have three separate control circuits, individually regulate each phase and are therefore suitable for unbalanced lines and load unbalance between phases. The Line Conditioner shall be in IP54 housing. The Line Conditioner shall have a frequency range of 45 – 65 Hz, it should have an admitted load variation from 0% to 100% and admitted load unbalance of up to 100% and it should support mains waveform distortion increment of < 0.2%. It shall be Natural Air Cooled and should support ambient temperatures of -15°C to +45°C and Relative Humidity of up to 95%. It shall have an admitted overload capacity of 200% for 2 minutes. The Voltage Stabiliser shall be sensed by solid state electronics and servo mechanical motor controlled and it shall have admitted load variation of 0 to 100% and shall support admitted load unbalance of up to 100%. It shall have a correction speed of < 20 ms/V and a	2	№

	harmonic distortion of < 0.2 % - nil and none added. It shall have Input/Output multi-task digital network analyzers installed to provide monitoring & measurement of electrical values, energy metering as phase and linked voltage, current, frequency, power factor, active and apparent powers, reactive powers with digital display. It shall lightning protection against spikes/surges - Imax 40kA TVSS class I + II. It shall have Circuit breakers for overload and short circuit protection on the regulation circuit (itself) and Voltage regulator protection breaker controlled by thermal probes in case of temporary overload. It shall have connectivity options for adjustment and setting the voltage regulator parameters and shall have an Ethernet/SNMP interface. It shall have soft start and soft stop functions given by super-capacitor system for safe load supply at start-up and shall have alarms for minimum and maximum voltages, maximum current and over-temperature, ventilation failure. It shall have manual change over incorporated by-pass switch and should be fitted with an automatic bypass system which trips automatically in case of overload, still maintaining the load supplied (although with a not stabilised voltage). The protection opens the connection between the voltage regulator and the buck/boost transformer, closing at the same time in short-circuit the transformer primary winding. By doing so, the transformer voltage drop is cancelled and the user can be supplied the mains voltage without interruption. In order to encourage an inspection on the stabiliser and an investigation on the cause of the intervention, the protection can be reset only manually. The isolation transformer shall be a dry type three phase transformer and shall have a rated input voltage of 400V having 3ϕ 400 VAC Primary Winding and 3ϕ + N 400 VAC on load Secondary Winding. The connection shall be Dyn11, the insulation class shall be Class H and the insulation level shall be 3kV offering galvanic isolation between primary and secondary winding and an electrostatic shield between the windings. The transformer shall have an additional integrated reactance magnetic core between the windings to offer a short-circuit voltage of up to 50% of the rated input voltage and shall have a K-factor value of K13 having H class electrolytic copper and annealed aluminium. The transformer should have UL approved insulation and H class UL approved polyester resin for in-vacuum impregnation.		
64	Supply, Installation, Testing and commissioning of water cooled Diesel Generating Set including all associated equipment & panels, the set shall be producing a minimum 150 kVA (at an operating voltage of 415/240 at 50 cycles per second for a three phase four wire system suitable for 50 °C ambient temperature tropicalized under site condition when running at a speed of 1500 rpm. The set shall be having the diesel engine, alternator, with water-cooling system with heavy duty engine mounted radiator, Controller Panel, Electronic Governor, Exciter, Batteries, Battery Trays, Battery Leads, Filters for air, fuel and lube oil all other accessories mounted on a common base frame enclosed in manufacturer's supplied original acoustic canopy (72 dBA at a distance of 1 meter) and shall be supplied complete with exhaust system with double industrial type silencers, flanges, engine exhaust pipes, anti-vibrating mounting pad, complete in all respect and confirming to all standard specifications. The generator sets shall come with Echelon or Modbus based Remote Monitoring Solution for Generator Sets providing	2	№

	monitoring capabilities with the necessary Software and Base Fuel Day Tank for 24 hour operations. Initial Oil Change, Diesel Fuel for testing purposes and Full Day Tank of Diesel Fuel would be the responsibility of the Contractor. The fuel tanks shall have level sensors for indication of fuel levels.		
65	Supply and Installation of Main Storage Tank to store diesel fuel for 2 x 120 kVA Diesel Generator Sets for a continuous period of 48 hours together with piping and Pumps for transferring fuel from Main Storage Tank to 2 x Generator Fuel Tanks. The Storage Tank shall come with appropriate Fuel level sensor for accurate non-contact level monitoring unit display of fuel levels. The fully encapsulated sensor/transmitter is temperature compensated. Installation shall require no programming or calibration. No maintenance is required. Should be integrated with BMS System	1	Solution
66	Provision of Earthing to provide less than 2 Ω Resistance to include Earth Terminal Point and all necessary earthing arrangements.	6	Jobs
67	Provision of Lightning Arrestor Solution based on BS Standard to include: a) 100m x 70 mm^2 copper rope b) 2 x Earth Electrode ¾" Ø, 10' long Cu deposited steel rod c) 3x testing terminals d) 8 x Lightning Arrestor with spikes	1	Job
68	Supply and Installation of Power Distribution Frame for supplying power to the PDU's in each of the 12 cabinets (5 kW each). Should include the necessary Power Cabling, Cable Pathways and any other accessories required. Each power input in a PDF provides an electricity tester to measure the voltage, current, frequency, power, and power factor of the three-phase AC power. The measured parameters are reported to the monitoring system over the RS485 port. Configured with Overload protection and short circuit protection system; Lightning protection level: C level or above; Support surge protection.	1	Solution
69	Supply and Installation of Power Distribution Boxes with 3 x 32A 3 Core (Single Phase) Industrial Sockets with matching plugs and 32A 3P Breakers.	4	№
70	Supply, Installation, Testing and Commissioning of Main panel to include the following: a) 2 x 400Amps motorized electrically and mechanically interlocked MCCB 4 pole adjustable RC 50 KA with UVT and EVR on the incoming side which include Communications and shall also includes the following components • 6 x 2 Amps Protection fuses • 1 x DIGITAL Energy Analyzer with building KWHr meter • 1 x VSS (RY-YB-BR-OFF-RN-YN-BN) • 1 x Current Transformers • 3 x R-Y-B Indication lamps • 100A 65kA Surge Protection Device (Type1 + Type 2) • 1 x AMF Controller b) 2 x 400Amps motorized electrically and mechanically interlocked MCCB 4 pole adjustable RC 50 KA with UVT and EVR on the incoming side which include Communications and shall also includes the following components:	1	№

- 6 x 2 Amps Protection fuses
- 1 x DIGITAL Energy Analyzer with building KWHr meter
- 1 x VSS (RY-YB-BR-OFF-RN-YN-BN)
- 1 x Current Transformers
- 3 x R-Y-B Indication lamps
- 100A 65kA Surge Protection Device (Type1 + Type 2)
- 1 x AMF Controller

c) 10 x Control Relays with base
d) 7 x Timers with base
e) 2 x Manual Change Over Switch
f) 1 x 400 Amps TPole MCCB Adj RC- 50kA on the outgoing side with motorized control, communication for BMS System including MCH, UVT, Shunt trip, closing coil, timer etc
g) 4 x 250 Amps TP MCCB Adj RC-50kA on the outgoing side with motorized control, communication for BMS system including MCH,UVT, Shunt trip, closing coil, timer etc
h) 5 x 100 Amps TP MCCB Adj RC-50kA on the outgoing side with motorized control, communication for BMS system including MCH,UVT, Shunt trip, closing coil, timer etc
i) 3 x 50 Amps TP MCCB RC-15kA on the outgoing side with motorized control, communication for BMS system including MCH,UVT, Shunt trip, closing coil, timer etc

The Switchgear shall be suitable for surface mounting. It shall be totally enclosed, dust and damp proof. The Switchgear shall be complete in all respects with material and accessories, factory assembled, tested and finished according to the Specifications and to the normal requirements. All components shall be installed on a common mounting plate inside the enclosure and protected from the front with screwed sheet steel front plate. The enclosure shall be provided with rubber gasketting and a lockable hinged door with cam fastener. The distribution board shall be supplied complete with all installation materials as recommended by the manufacturer. The incoming and outgoing cable connections shall be according to the wiring requirements. If required, an adapter box for accommodating the cables and conduits may be provided. The box shall be of the same material and finish as the distribution board. The cabling inside shall be suitably harnessed by means of straps or cords. An earth bar or terminal strips shall be provided for connection of incoming and outgoing earth conductors. The earth bar or terminals shall be permanently connected to the body of distribution board at two points. The Switchgear shall be IP 44.

The latest editions of the following standards and codes shall be applicable for the materials specified within the scope of this Section:

a. BS 4752-1 - Triple Molded Case Circuit Breaker
b. BS 3871 - Single and Triple Miniature Circuit Breaker

c. IEC 157
d. VDE 0641
e. IEC 157 & 158 - Low Voltage Switch gear and Control gear
f. IEC 439 - Factory Built Assemblies of LV Switch gear
g. IEC 4752 - Switch gear and control gear for Voltages up to & including 1KV
h. BS 88 - HRC Fuses
i. IEC 73 - Colors for indicator lights and push buttons.
j. IEC 446 - Identification of insulated/bare conductors

The bus bars shall be made of high conductivity electrolytic copper and shall be completely isolated and mechanically braced for the specified fault level. The phase identification of bus bars shall be by colors applied on bus bars and these shall be red, yellow and blue for phase and white for natural. The earth bus bar shall be green. The bus bars shall be triple pole and neutral and shall be of appropriate size to meet the electrical and mechanical requirements of the system. The temperature rise shall not exceed 45 degrees centigrade at rated current.

Circuit breaker shall be three or four pole as required with microprocessor based protection and shall respond to true RMS value of waveform including harmonic distortion within the neutral pole. Air circuit breakers shall comply with EN 60947 part 2 utilization category B and to IEC947 Part 2. Circuit Breakers shall be draw out type, with interlocks to prevent moving a closed breaker into or out of the connected position. Circuit Breakers shall be equipped with a grounding device to solidly ground the framework before the main disconnecting contacts are engaged and to maintain the grounding, until after the contacts have separated. CB shall be electrically operated, with key switch mounted on the faceplate. CB trips shall be completely self-powered with no external control power source required. CB shall be provided for protection against overload, short circuits with time delay and earth faults and have the following functions:

a. Adjustable long time delay trip - 0.5 to 1.0 x Normal Current Rating
b. Adjustable short time delay trip - 1.5 to 8.0 x Normal Current Rating
c. Instantaneous trip - 2.0 to 10.0 x Normal Current Rating
d. Ground fault trip - Earth Fault
e. Circuit breakers shall be provided with trip circuit supervision relays.

CB shall be complete with a digital monitor to enable the following measurements to be read on the breaker.

a. Phase current.
b. Ground fault current.

	c. Long time delay trip current/line d. Short time delay trip current/line e. Instantaneous trip current. f. Ground fault trip current/line. Where specified CB shall be electrically inter locked to allow only one CB to be 'ON' at any given line & will have 100% automatic operation. Push buttons shall be momentary make break contact type (normally open/normally close). These shall be suitable for flush mounting. Distribution board, plastic face plate etc. Push buttons shall have round/square head. These shall be of red color for 'ON' and green color for 'OFF' operations. The Contractor shall provide the necessary glands, lugs, heat shrink tubes and boots as required for turnkey installation. The Contractor shall perform MegOhm Testing for Cable Insulation and Submit the Reports.		
71	Supply, Installation, Testing and Commissioning of HVAC Distribution Board to include the following: a) 2 x 250 Amps MCCB 3 pole Adjustable RC 50 KA on the incoming side which includes Communications and also includes the following components a) 6 x 2 Amps Protection fuses b) 3 x R-Y-B Indication lamps c) 1 x 0-500Volts AC DIGITAL Voltmeter d) 1 x 0-400 Amps AC Digital Ammeter e) 2 x Contactors c) 14 x 60Amps MCB Single Pole RC-25kA on the outgoing side with Contactors	1	№
72	Supply, Installation, Testing and Commissioning of D.B to include the following: a) 1 x 50 Amps MCCB 3 pole RC- 15KA on the Incoming side which includes Communictions for the BMS system f) 6 x 2 Amps Protection fuses g) 3 x R-Y-B Indication lamps h) 1 x 600/5Amps Current Transformers i) 1 x 0-500Volts AC DIGITAL Voltmeter j) 1 x 0-630 Amps AC Digital Ammeter b) 8 x 16 Amps MCB RC-10KA single pole on the Outgoing side with Contactors	2	№
73	Supply, Installation and Commissioning of Data Centre Monitoring System to provide integrated status monitoring and control of the HVAC, Power, Surveillance and Access Control and Fire Protection Systems including complete environment monitoring providing real time status displays, reports and alarms. Should support IP. Should provide a standard platform that supports flexible configurations, high scalability, and management by layer. Should also provide necessary I/Os to connect all sensors procured, get Generator status, fuel level status and connect all MCCB with communications interfaces. Should be a comprehensive Data Centre OS that should also include Data Centre Infrastructure Management solution and BI Analytics and Reporting tool.	1	Solution
74	Supply and installation of Temperature and Humidity Sensors with 4-20mA or 0-10VDC output and range of 0 to 50 °C and 0 to 100% r.h. preferably with display	20	№

75	Supply and installation of Room Air Quality Sensor with 0-10VDC or 4-20mA output and Volatile Organic Compounds Sensor to detect and measure mixed gases	2	№
76	Supply and installation of Door Contact Sensors	48	№
77	Supply and installation of RS485 Tinned copper, Foamed FEP - Foam Fluorinated Ethylene Propylene insulation, twisted pairs. Overall Beldfoil Aluminium foil-Polyester Shield. 24 AWG stranded tinned copper drain wire. Overall tinned copper braid shield (90% coverage). Natural FA - Flamarrest jacket.	100	m
78	Supply and installation of 3 core shielded 1 mm^2 PVC cable CY type for Control Applications.	100	m
79	Supply and Commissioning of GPRS Modem to integrate with Monitoring System provided as S.No. 77 for sending alerts by SMS on any mobile network operating in Pakistan with good signal coverage at the project site.	1	№
80	Supply and Installation of NOC Monitoring Solution to include video wall made of 6 x LCD 42" screens installed together with a seam of less than 5mm. Shall support 4 x DVI inputs.	1	Solution
81	Supply and Installation of Blade Servers Solution to include 12 x Servers each with 2 x Intel 4-Core 2.20 GHz Processors (or equivalent), 16 GB DDR-3 RAM (expandable to 256GB), 2 x 150 GB hot plug HDD with appropriate RAID controller supporting RAID 0, 1 and 5, 2 x Fibre Channel HBA Ports and 2 x Gigabit Ethernet Ports with support for TCP offload and iSCSI. The Blade Servers shall be installed in appropriate Blade Chassis with N+N Fully Redundant Power Supplies and Cooling on each chassis, 2 x Ethernet Switch with 48 Gbps Switching Fabric to connect all Blade Servers on GbE with 4 x 10GbE uplink or 8 x GbE uplink and 2 x FC SAN Switch to provide full duplex connectivity to all Blade Servers in the Chassis in a fully redundant configuration. Must include all required optics/SFPs. The offered solution shall include System remote management software that should support browser based Graphical Remote Console; Remote boot using USB / CD/ DVD Drive and should be capable to offer upgrade of software and patches from a remote client using Media / image/ folder; The offered solution shall include Systems Management Software that should help provide proactive notification of actual or impending component failure alerts on critical components like CPU, Memory and HDD. The Blade Servers should be housed in Blade Chassis as per the solution requirement needed to house the required number of blade servers in smallest number of chassis. Blade Chassis shall support simultaneous housing of Ethernet, 10 Gigabit Ethernet, infiniBand, FC, iSCSI interconnect fabrics offering Hot Pluggable and Redundancy. The Blade Chassis should provision for a single console to monitor multiple enclosures. The Blade Chassis should be populated fully with power supplies of the highest capacity available with the vendor. Power supplies should support N+N as well as N+1 redundancy configuration. Each blade enclosure should have a cooling subsystem consisting of redundant hot pluggable fans or blowers enabled with technologies for improved power consumption and acoustics. Each blade enclosure shall have management solution that shall provide the functionality	1	Solution

	to plan capacity and power continuously, balance across physical and virtual resources. Each blade enclosure shall have management solution that shall help in providing high availability and provisioning of infrastructure consistently across physical and virtual resources. The offered solution shall include the necessary management software are required. The offered solution shall include a Virtualised operating system (OS) for all of the Blade Servers. The Virtualised OS will be utilized to provide technical functions, such as virtualization and resource management and scheduling. Virtualization technology integrates resources into a resource pool, which allows virtualized IT resources to be allocated flexibly, thereby meeting requirements of different services. Core values of virtualization consist of improving resource usage, reducing IT environment deployment costs, shortening service rollout periods, and optimizing system availability. The OS used in must consist of the following functional modules to meet preceding requirements and comply with industry standards. Virtualization software based on x86 architecture (Intel Architecture or equivalent) servers is to be provided. The software uses a bare metal architecture to meet software and hardware decoupling requirements. The software is used in IT resource virtualization, including central processing unit (CPU) virtualization, memory virtualization, IO virtualization, and storage virtualization. In addition, the software supports hardware-assisted virtualization technology, such as Intel VT-X/VT-D and EPT (or equivalent). A resource management system that is matched with virtualization software is to be provided to allocate physical and virtual resources and support operation and maintenance (O&M) management. O&M management functions of hardware, software, and services are provided. The O&M management system cooperates with the resource management system to implement the all-rounded O&M capability of hardware, software, and services. In addition, the O&M management system supports friendly web user interface (UI) maintenance interfaces, user right- and domain-based management, high security, fault prevention and automatic recovery capabilities, software high availability (HA), and high availability to reduce impact on systems and services due to faults. The O&M management system also supports automatic system configuration backup to avoid system data loss and supports Virtual Machine (VM) snapshots so that VMs can be created and recovered by using snapshots. The O&M management system provides users with data backup functions, supports alarm email and SMS real-time notification to help users to monitor systems in a timely manner, supports log records to facilitate auditing and fault processing, and supports flexible configuration and reports. The offered solution shall also include 8 x Windows 2008 Server licenses to be implemented on the Virtualised OS.		
82	Supply and Installation of Rack Mount Servers with Dual Intel® Xeon® 4 core, 1.60 GHz Processor (or equivalent), 4 GB RAM, 2 PCIe slots, 2 x 2 TB SAS/SATA HDD, 1U or 2U with Redundant Power Supplies, 10/100/1000 Mbps UTP Network Interface. Should come with Microsoft Windows	2	№

	Server Enterprise 2008. Contractor must implement Microsoft Active Directory on the Servers.		
83	Supply of Windows Server CALs	150	№
84	Supply of SQL Server 2008 Enterprise Licenses for 2 Servers with 150 CALs	1	Solution
85	Supply, Installation and Configuration of FC SAN with 12 TB Raw Capacity using 600 GB 6Gbps 15,000 rpm SAS HDD and VTL solution with 12 TB Raw Capacity using 2TB 6Gbps 7,200 rpm SAS HDD. SAN solution shall support Snapshot, Capacity free snapshot without locking the disk space, Full physical copy (Cloning), LUN Copy and Asynchronous as well as Synchronous remote replication functions. The offered solution shall be scalable to minimum of 200 drives. The SAN Controllers shall be true active-active so that a single logical unit can be shared across both controllers at the same time. Offered Storage Array shall be configurable in a No Single Point of Failure configuration including Array Controller card, Cache memory, FAN, Power supply etc. The storage array should have a minimum of 16GB mirrored cache. Cache shall be used only for Data and control information and shall not be loaded for OS overhead. Offered Storage shall have minimum of 8 host ports running at 8Gbps speed. Offered storage array shall have minimum of 4 device ports or 16 SAS lanes for Servers and disk connectivity. Each SAS port shall be capable to work at 6Gbps. Offered storage shall be end to end 6Gbps. The storage array should support 6Gbps dual-ported drives in both SFF and LFF format of various capacities like 146GB, 300GB, 600GB, 900GB etc. along with 1TB, 2TB and 3TB SAS Mid-line drives. The storage array should support hardware based RAID 0, 0+1, 1, 0+5 and 6 levels. Storage System shall have the capability to create a single raid volume of at-least 24TB at storage controller level. Offered storage array shall support intermixing of both Small form factors (SFF) as well as large form factor drives (LFF) inside the array. Offered storage shall support dynamic expansion of both Raid set and disk group on both controller and host level as per defined policies. Offered storage array shall have native virtualization support so that Raid 1, Raid 5, Raid 1+0, Raid 6 can be carved out from a logical space instead of dedicating separate physical disks for each application. Every supplied disk shall be able to participate into multiple and different raid sets simultaneously. In case of power failure, storage subsystem shall have the Capability to keep the uncommitted information inside cache for at-least 96 hours or in a de-staged fashion. Bidder shall ensure that in case of de-stage mode, Dual redundant Standby power supplies are configured. Storage shall be offered with performance management software. Storage subsystem shall be offered with Thin Provisioning software and License for the complete offered capacity. The storage array should have support controller-based snapshots functionality for pointer-based snapshots (At-least 48 copies), Capacity free snapshots without locking the required disk space and full physical copies. Storage subsystem shall support non-disruptive online volume migration from one tier to another tier and from one raid set	1	Solution

	to another raid-set without any interruption into host operations. Offered storage shall support non-disruptive online firmware upgrade for both Controllers and disk drives. The storage array should support hardware based data replication at the array controller level across all models of the offered family. The Storage array shall support Continuous Asynchronous Replication to DR location instead of buffering inside cache at Primary location for better Recovery time objective. The storage array should support industry-leading Operating System platforms & clustering including: Windows Server 2008, VMWARE and Linux. The storage array should support only Real time / UNIX based operating system, dual, redundant, hot-pluggable; active-active array controllers with high performance RISC based CPUs. The VTL solution shall provide legal archiving with complete audit trail and record of any changes and modifications and shall comply with the audit and data security clauses of international recommendations like SOX, SEC-17, HIPAA, GLBA and PCI DSS as applicable. Should include Backup and recovery software for backup and recovery from servers connected to the SAN to the VTL solution.		
86	Supply, Installation and Configuration of Privileged user management and brokerage software solution for delegation and authorization of Root tasks in the virtualized data centre environment for the Virtualization Solution provided for 18 servers supporting at least 20 guest OS.	1	Solution
87	Supply and Installation of Data Loss Prevention solution based on active behavioral profiling of user traffic preventing data leaks over the web, e-mail, instant messengers, devices, printers and through various network applications for 150 users.	1	Solution
88	Supply, Installation and Commissioning of Core Ethernet Switch. Each Core Ethernet shall have full Layer-3 functionality and fully Redundant N+N Power Supplies, Shall be a Multi-layer switch with modular and scalable architecture. The Core Switch shall have 10 x 10GbE ports, 24 x 1Gbps Ethernet ports. Shall have 500 Gbps Backplane Capacity. The Core Switch shall have hardware-based Layer 2 failure detection, Hardware Ethernet OAM, Hardware-based Layer 3 fault detection, Individual Process Management without restarting Switch. The Core Switch shall support STP (802.1d), RSTP (802.1w) MSTP (802.1s) functionality, VLAN and 802.1Q VLAN Tagging functionality, 802.1p Class-of-Service (CoS) Tagging or Q-in-Q (802.1ad), 802.3ad Link aggregation with LACP, Switch management through Secure Shell(SSH) version-2, Network Time Protocol (NTP) version 3, SNMP Version 2c and Version 3 functionality, Configuration upload and Download using SFTP/TFTP/ Web Interface, Port Mirroring across the line cards and Modules of the switch, Unidirectional Link Detection on Fiber interfaces, Static Routing, IP Multicasting. The switch shall support AAA Radius, NetStream/S-	2	№

	Flow/NetFlow/IPFIX and similar functionality, Capable to detect and drop the traffic from spoofed IP Address, Port Based security functionality, VLAN within VLAN (MUX VLAN) functionality, Spanning-Tree Protocol security feature, BPD Guard, BPDU Filter and Root Guard, Dual Power supplies with Full Redundant Functionality, Redundant Fans, Hot-swappable field-replaceable power supplies, fan modules, and expansion modules. All Optics and Installation Accessories shall be provided by the Contractor.		
89	Supply, Installation and Commissioning of L2 PoE switch with 48 Port 10/100 and 2 x Gigabit Ethernet Uplink Ports with base Layer 3 Functionality to include N+N Redundant Power Supplies and Cooling.	2	№
90	Supply, Installation and Commissioning of IP MPLS Edge Routers with 4 x 10/100 Ethernet Ports and 2 x PRI Ports to include N+N Redundant Power Supplies and Cooling. Layer 3 forwarding Performance (64-byte packet size) should be 2.0 Mpps. Support of all the module hot swapping.	2	№
91	Supply, Installation and Configuration of Deep Packet Inspection Firewall with Integrated IPS with 2 x 10Gbps Ethernet Interfaces, 8 x 1Gbps Ethernet Interfaces, High Availability Active-Active Configuration Support. Should include any subscriptions required. Shall have Stateful Firewall, IPSec VPN, IPS Capability. The firewall performance shall be 20 Gbps with 6 Gbps IPS performance and 6 Gbps AES256+SHA-1 / 3DES+SHA-1 VPN performance. Should support 2 Million concurrent sessions and at least 150,000 new sessions per second. The Firewall shall support at least 40,000 security policies. There shall be no restriction on the number of users. The solution shall support virtual routers and VLANs. The solution shall support application identification and classification providing a deep understanding of application behaviors and weaknesses to prevent application borne threats that are difficult to detect and stop. The solution shall provide visibility for application usage and bandwidth, enforcement to block/allow applications, application control and prioritization and protection against DoS, DDos and botnet attacks. The solution shall use protocol and context information and signatures to identify applications and identify applications running on top of or embedded into approved and trusted services and protocols. The solution shall support fine-grained policies including application security, based on user role and identity for all endpoints. It shall inspect HTTP traffic encrypted in SSL on any TCP/UDP port. It shall support IPS, IPSec VPN, NAT, QoS, routing, and switching. It shall support policy based bandwidth management. IPS capability shall provide Worm Mitigation. The Firewall shall support Network attack detection, DoS and DDoS protection, TCP reassembly for fragmented packet protection, Brute force attack mitigation, SYN cookie protection, Zone-based IP spoofing, Malformed packet protection and the IPS shall support Stateful protocol signatures, Attack detection mechanisms: Stateful signatures, protocol anomaly detection (zero-day coverage), application	2	№

	identification. The Attack response mechanisms shall include Drop connection, close connection, session packet log, session summary, email, custom session. The Attack notification mechanisms shall include Structured syslog. The IPS shall support Worm protection, SSL encrypted traffic inspection, Trojan protection, Spyware/adware/keylogger protection, Other malware protection, Protection against attack proliferation from infected systems, Reconnaissance protection, Request and response side attack protection, and shall detect based on both stateful signatures and protocol anomalies. It shall be able to create custom attack signatures with 500+ Access contexts for customization, Attack editing (port range, other), Stream signatures, Protocol thresholds, Stateful protocol signatures, covering more than 6000 number of attacks covered, Detailed threat descriptions and remediation/patch info. It shall create and enforce appropriate application-usage policies. It shall support attacker and target audit trail and reporting and shall support Inline as well as TAP deployment mode. The Firewall should have unified threat management system with IPS (Deep Inspection firewall), Protocol anomaly detection, State-full protocol signatures, IPS/Deep Inspection attack pattern obfuscation and External URL filtering.		
92	Supply and installation of PC with Intel Core i5 Processor (3.06 GHz or higher) (or equivalent), 4GB RAM, 150GB HDD in Small Form Factor with 21" LCD Monitor. USB Keyboard and mouse should be included. MS Windows 7 Professional Operating System shall be pre-installed.	5	№
93	Supply, Installation and Configuration of Anti-Virus, Vulnerability Assessment, Threat Management Solution and Network Traffic Analysis Solution for 200 users scalable to 5,000 users with Subscription for 3 Years. The Anti-Virus, Vulnerability Assessment and Threat Management Solution shall provide Integrated Security, Vulnerability Management, Incident Management, Endpoint Protection and Compliance Management though Network Discovery, Automated Vulnerability and Risk Assessment, Centralized Policy Enforcement and Compliance Audit in an Appliance Form Factor. The appliance should have all services pre-installed, pre-configured, pre-tuned, and pre-licensed in the appliance. The appliance shall offer cohesive policy, threat and vulnerability management framework. The appliance shall pinpoint network vulnerabilities, operating system vulnerabilities, application vulnerabilities, improper configurations, and published zero-day threats. The appliance shall offer discovery and patch assessment, rapidly discovering and assessing all network devices, operating systems, applications, patch levels, and policy configurations. The appliance shall offer Network Based Vulnerability Assessment, Network Based Traffic Analyzer and Network Distributed Scanners. The solution shall offer comprehensive end-point protection for 200 users and should be scaleable to at least 5,000 users. The solution should be capable of scanning 20,000 assets. The solution shall offer the ability to have multiple tiers of	1	Solution

	management. The solution shall provide flexibility in scanner deployment for distributed and non-distributed environments. The Vulnerability Assessment solution shall export data SIEM, IDS/IPS and NAC systems and should have several integration points for access to scan and attack and protection agent data. These should include publishing the database schema, writing events to the Windows event log, SNMP Trap Forwarding, Syslog Daemon, email alerts, command line interface and data exports. Solution shall support centralized administration in a geographically dispersed scanner deployment. During a vulnerability scan, the offered solution shall take the target(s), port(s), and audit(s) assigned to scan and first initiates a discovery of each target. Once the target is determined live, a port scan shall be performed and protocol detection. Once the port scan is complete, an OS detection is to be done to determine the host type. Based on the OS and open ports, the applicable audits are to run against the target. If the scan was supplied credentials, then if NetBIOS ports or SSH is detected, solution shall attempt to log in and run the applicable audits for the host. Credentialed based audits are typically patch level checks to configuration-related checks (password length, lock out time, etc.) to gathering machine info (OS verification, software installed, hardware, etc.). The scanner shall accurately discover all the assets in the network infrastructure including operating system platforms, networked devices, databases and third party or custom applications. The system shall scan active ports and confirms the services associated with those ports. The scanner shall be non-intrusive scanner and shall minimize the network impact by allowing for bandwidth throttling taking four parameters into consideration: a. Scan: the number of targets or hosts to simultaneously scan at a time. This can be adjusted based on the available network speed where the hosts are being scanned. b. Adaptive Scan Speed, this determines the amount of latency we introduce for a reply from a given host. c. Ping Timeout: the amount of time to wait for host replies d. Data Timeout: the amount of time to wait for data to be sent from the hosts. The discovery process shall ensure that only the necessary audits are run on a given host by correctly determining the available ports, protocols and operating system. Solution shall discover all the assets on a given network, including operating systems, applications, services, databases and wireless devices as well as advanced OS discovery utilizing ICMP, registry, NetBIOS, and the Nmap signature database. Solution shall use profiles of the most commonly utilized ports, and allow for scanning of all 65,536 ports on a network device. Asset discovery shall be done without penalty against the license count which allows an organization to be proactive in ensuring that new or rogue devices can be accounted for without the concern of losing a license. Solution shall provide vulnerability information and references multiple vulnerability IDs, including Common Vulnerabilities and Exposures (CVE), SANS Top-20,		

	Bugtraq ID, Common Vulnerability Scoring System (CVSS), OWASP Top 10 (A1-A6) and vendor-specific IDs, where applicable as well as it should identify publically disclosed zero day vulnerabilities. The solution shall score vulnerabilities on different scales including number and severity of vulnerabilities, number and severity of attacks, exposures (ports, shares, users, services and threats. The solution shall have a number of built-in attributes (Geography, Business Unit, Manufacturer, etc.) that are extensible to include other categories applicable to the customer's needs. Classification and group can be assigned automatically through the use of rules. The solution also has the ability to leverage data discovered during a scan (i.e. OS, installed applications, services, shares, etc.) for further granular classification. Solution shall allow for complete flexibility in threat ratings for audits within the audit database. Solution shall offer flexibility in the types of scanning needed to perform for web application. The solution shall accommodate authenticated and/or unauthenticated web application scanning. The offered solution shall scans databases for vulnerable configuration settings and known software vulnerabilities. The offered solution shall be SCAP certified. The End Point Protection agent shall have multiple layers of protection in additional to the Local Vulnerability Assessment component to assess and prevent zero day vulnerabilities. It shall support Intrusion Prevention & Zero-Day Protection. The End Point Protection solution shall provide protection where a vendor has not yet created signatures or patches to protect against vulnerabilities in their operating system or application. The solution shall look for known and unknown buffer overflows and terminate any calls that are not authorized. The solution shall inspect protocols using regular expressions for potential leakage of data. The solution shall have File Execution Protection capabilities to provide control over which applications are allowed to function by authorizing or denying program file execution. The offered solution shall have Registry Protection and should prevent specific registry settings from being modified, stopping malicious programs from infecting or modifying systems. The solution shall offer 'Storage Protection' which prevents data leakage by regulating USB and Firewire storage devices. The solution shall have Protection agent that can prevent file execution for authorized file types and file callers to ensure users are held to corporate compliance and applicable virus outbreaks are held at bay. The Protection agent should prevent users from access 'banned' websites regardless of where they are located. The IPS system shall inspect the HTTP headers to determine if an unauthorized website is being called. The Protection agent shall prevent users and malware from reading and/or modifying registry keys as part of the system protection capabilities using wildcards, exact/partial match and RegEx expressions. The offered solution shall provide the ability to create rules for automatic asset grouping with a number of built-in attributes (geography, business unit, criticality, etc.) The solution also has the ability to define your own attributes with the ability to create sub-categories (i.e. Data Centre: East, West, Central). This data can also be leveraged in both the Asset and Corporate Risk UI's for viewing critical network risk and vulnerabilities from multiple perspectives. The solution shall rely on a combination of MAC address, Hostname and SID (where applicable) for maintaining asset classification and to		

	ensure uniqueness of an asset. Shall also include Network Traffic Analysis solution with atleat two scanners offering continuous vulnerability forensics plus network performance analysis empowering security and operations teams by providing granular data monitoring and precise packet and session reconstruction capabilities. Shall also provide Session Reconstruction collecting network traffic and reassembling it as its native session based format, enabling users to quickly and easily make business decisions based on the service. Shall be able to present the actual text of an email, as well as any attachments, exactly as it was sent. Shall provide reconstruction of full HTML pages that end users visited and reconstruction of cookies for entry into password-protected websites. Shall also display bi-directional instant messaging communications allowing full session reconstruction as the end user sees it. The Capture Engine shall permit security professionals to gather forensic information while performing other tasks in parallel. Shal capture specific data via filters based on a myriad of traffic metrics. This approach ensures that all targeted traffic is captured, regardless of whether the solution is run interactive or as a service. For capacity and service level agreement planning, Shall allow users to leverage traffic captured in one area of a network for use elsewhere, as well as for the monitoring of applications in development. Shall allows advanced functions such as keyword searching and protocol distribution. Shall provide a large variety of statistical measurements, supplying information on protocol distribution, top hosts, packet-size distribution and bandwidth usage. By regularly analyzing how systems and applications are being used, administrators can proactively identify and eliminate issues before they can result in downtime. Shall also provide the proof required to drive the creation and enforcement of policies related to appropriate system and application usage.		
94	Supply, installation and configuration of Network Fault Management Solution for 200 assets Network Fault Management (NFM) Solution shall support Layer 2, Layer 3 and higher layer Modelling as well as Device Class Based Modelling. NFM should support Spiral Discovery and Automated RCA. NFM should have Capability to provide detailed routing protocol analysis. NFM should provide event correlation to be integrated with configuration management module. NFM should offer Protocol based network monitoring/modelling (MPLS, OSPF, BGP etc). NFM should provide Service based network clouds support. NFM should offer detailed network inventory/assets along with status information. NFM should offer out of the box correlation between L2 and L3 through a single Database. NFM should offer Basic Fault Reporting, Event de-duplication and event level automation through a single event engine. NFM should offer end to end cross domain fault management. NFM should offer policy based event automation. NFM should offer policy based event severity upgrade/downgrade. NFM should offer protocol/technology/vendor specific probing. NFM should offer support for standardise 3-tier model for Fault Management i.e. collection, consolidation, display. NFM should support discovering of the following types of links and interfaces between two devices Layer-2 links, Layer3 links, aggregated links, Multilink, sub-interfaces etc. NFM	1	Solution

	should provide a common console to integrate with other EMS products. NFM should support automation for problem resolution. NFM should provide automation of network diagrams. NFM should provide technology specific event views, task oriented views and dynamic maps. NFM should have a centralized fault reporting engine. NFM should support GIS views. NFM should offer network views based on Geography, Technology, Event severity, User role, Network Type and Operations. NFM should provide support for integration with Server and application monitoring solution. NFM should provide Integration with third party diagnostic tools. The system must support panning and zooming of large network maps. The system must have filtering capability to: a. Limit what network information to discover b. Limit the topology information forwarded from another management station c. Limit what can be view on the network map The system must able to load-in multi-vendor MIB files without any programming. NFM should correlate the obtained IP flow records with Fault Management for context based analysis. NFM should aggregate IP Flow records. NFM should generate maps to view the traffic flow information on your network. NFM should support Jflow, NetFlow v5, v9, SFlow v5 technologies. NFM should provide collection and reporting capabilities on flow data that will assist in understanding performance bottlenecks in the network. NFM should receive flow statistics, aggregates/groups, filters, and stores flow data for analysis. NFM should offer flexible reporting of flows mapped to applications, sources, destinations, directionality, etc. The proposed solution must also support performance management functionality. The users should be able to monitor basic network performance parameters. The proposed performance management module should be an embedded feature of the core fault management module. The network management module should have network inventory management and reporting capability.		
95	Supply of Thermal Transfer (or Superior Technology) Labelling Machine with 2000 thermal labels for assets and 2000 thermal labels for cables	1	№
96	Supply of Earth Ground Testing Meter for testing Earth Resistance	1	№
97	Supply and installation of 2' x 2 LED Light Panels with at least 3 LEDs per inch in warm white color.	30	№
98	Supply and Installation of IP based KVM solution for 8 servers to include a rack-mount LCD monitor with integrated keyboard and pointing device.	1	№

DR Facility at Hyderabad

S.No	Requirement	Qty	Unit
99	Supply and Installation of Precision Milled Anti-Static Vinyl Tile Flooring made of High Density Resin with Conductive Carbon matrix. Should comply with ANSI S20.20 recommendations for Anti-Static Flooring.	800	ft^2
100	Supply and painting of 3 x coats of paint on new or old work such as walls and ceiling including all detached attachments	4760	ft^2

	with alkali resistant acrylic based paint upto 3 mm thick including surface preparation with putty filling.		
101	Supply and Installation of 24" x 24" Anti-Static Carpet Tile with tufted textured loop construction with a yarn weight of 18 oz/yd^2, 8 stitches per inch and pile height of 0.12". Should have stain protection and have Helix 44 Denier conductive fiber twisted into every tuft creating 100 conductive contact points per square inch. Static charges shall be ionized at the surface and conducted directly to ground through the static dissipative vinyl backing and conductive adhesive system. Should comply with ANSI S20.20 recommendations for Anti-Static Flooring. Should meet ASTM E-648 Class 1 flammability requirements.	450	ft^2
102	Supply and fixing of imported Dampa 0.7 mm ceiling 2' x 2' including necessary components with aluminum powder coated hangers, adjusters, wires etc. and provision of opening for lights.	450	ft^2
103	Supply and installation of 2' x 2 LED Light Panels with at least 3 LEDs per inch in warm white color.	18	№
104	Supply and Installation of 2-Hour Fire resistant Data Centre steel doors to include vision panels and shall have options for latched or unlatched operations. The doors shall be powder coated and shall have suitable hinges made of Stainless Steel frame and all installation and locking accessories. The door shall be two leaf with height of 8' and total width of 6'	1	№
105	Laying and Installation of Genset Foundation Pad 8' x 16' on existing RCC Floor after laying 2" thick cork sheet and then laying 6" thick RCC pad with ½" Ø steel reinforcement 6" apart.	1	№
106	Supply of High Quality Officer Desk 48" x 36" x 30" (H) with Melamine/Glass Top Finish and matching modular three drawer unit with casters.	1	№
107	Supply of High Quality Reception Desk 48" x 36" x 30" (H) with Melamine/Glass Top Finish and matching modular three drawer unit with casters.	1	№
108	Supply of High Quality Filing Cabinet in lamination finish 20" x 36" x 30" (H) with single shelf and double shutter complete with hardware.	2	№
109	High quality officer's hydraulic chairs with tilt function, leather or premium fabric upholstery with adjustable arms. Client Approval required before final delivery	4	№
110	Visitor Chairs matching with the Officer Chairs without casters and hydraulics	4	№
111	Two Seat Sofa Sets with back in Leatherette Finish 60" x 30" x 18" (H)	2	№
112	Supply, installation and commissioning of Hi-Voltage Electric Fence for Perimeter Security on boundary walls and gates of the facility. The electric fence should deter intruders with a Hi-Voltage but Non-Lethal Electric Shock and should be capable raising alarm if tampered besides sending SMS alerts. The proposed solution shall be trunk-key and come complete with Backup Battery, Terminal Rods, End Insulators, Pull Rods, Brackets & Clamps etc. as well as Copper Grounding Rod, Lightning Arresters as required. A warning plate shall be fitted at regular intervals and at every point where persons may gain easy access to the electrified conductors. Total perimeter wall length is 400feet with two 12feet wide, double entry gates. The specification of the fence energizer will be in accordance with IEC 60335-2-76 International Standard: 1. Peak value of voltage must be above 8kV,	1	№

	but not exceeding 10kV. 2. Maximum energy delivered to a load of 500Ω must not be less than 7.5 Joule. Minimum interval between impulses should not be less than 1.0 s. 3. Maximum impulse duration must be 50ms. 4. In order to provide optimum protection against lightning, all energizers must be installed in a dedicated lockable room inside the access control building. 5. No energizers must be installed in the field, in huts or outside panels along the perimeter fence. 6. The energizer must have its own standby DC power and should be programmable for multiple zones. All conductor wires must be manufactured from Aluminum for its very good corrosion resistance characteristics and low electrical resistance, and withstand saline atmospheric conditions. The Aluminum conductor wires must be pulled in position with a maximum force not exceeding 25Kg but not less than 20 kg to prevent wedging through or controlled electrical pass to defeat alarm. HT cables used to connect the energizer output connectors to the fence wires should have single inner conductor of Aluminum (same material composition as the Aluminum fence wires) to prevent galvanic corrosion. The Insulation material of HT cable should be UV (Ultraviolet) stabilized to withstand prolonged UV exposure. The fence wire and the High Voltage cable should be connected with suitable Aluminum crimp ferrules manufactured have the same material composition as the fence wire and the High Voltage cables. The insulators should be made from a UV resistant material. The insulator surface should not be damaged by flash over. The insulators should retain their rated mechanical strength over the temperature range of -10°C to +60°C. The insulators should not become brittle or soft under any ambient temperature conditions. The insulator should be designed such that the fence wire cannot be disengaged from them once installed. The insulators should demonstrate a minimum arcing voltage of 20kV when applied between the mounting screw and fence wire soaked with a 2 % saline solution. Strain insulators when fastened to a fixed point with its standard attachment screw, must withstand a pulling force of 300kg at 45 °C when applied to a 2.24mm steel wire attached to the insulator. A non-metallic, UV stabilized tensioning device should be used to tension the electric fence wires. The tensioning devices should be able to withstand at least five times the maximum installed wire tension of 20kg. The tensioning device should allow for the accurate tensioning of the fence wires to the required tension.		
113	Supply and Installation of 42U Free Standing Equipment	7	No.

	Cabinets housing 19 inch wide equipment in compliance with EIA-310-D standard; with a cabinet size of at least 600 mm Width x 1100 mm Depth. The mounting bar can be adjusted from the front or rear and two power distribution units (PDUs) can be vertically installed at the rear of each cabinet. Shall be configured with wheel and leveling feet used for quick movement and installation. The cabinets shall include front and rear doors and side panels. The ventilation rate between the front door and the rear door is greater than or equal to 70%. The opening angle of the door body is greater than or equal to 110 degrees. The cabinet shall be made of high-intensity class A carbon cold rolled steel sheet with thickness of 1.2 mm (0.05 in.) to 2.0 mm (0.08 in.). The cabinets shall have 2,000 lbs. static load rating. Shall be EIA Standard 19" Rack Mount Width to include four adjustable #12-24 threaded mounting rails with RMU markings. Should include lockable removable solid metal side panels and dual hinged perforated metal front and rear doors with keyed swing handle latch. Top Panel should be removable and shall include 4 x Fans for Air Flow Management and support top and bottom cable entry. Cabinet should be fully electrically bonded. Cabinet should include vertical cable managers on each side with 3" of cable capacity per side, 2 x Horizontal Cable Managers. The cabinet should include grounding strip across its height with jumper cable to connect to the grounding network. Each front door and back door shall be configured with two temperature sensors. Each back door is configured with one door status sensor. The cabinets shall comply with RoHS standard. Each cabinet shall include two pairs of equipment mounting rails. Mounting rails shall bolt to the supports located near the top, middle and bottom of the frame and shall be fully adjustable in depth to provide front and rear support for equipment. Equipment Mounting Rails shall be spaced horizontally to support 19" (482.6 mm) wide EIA-310-D compliant rack-mount equipment and shall provide up to 39" (990 mm) of rail-to-rail depth for equipment. Mounting rails will be L-shaped. The front flange shall be square-punched according to the EIA-310-D Universal hole pattern with equipment mounting holes on alternating 5/8" – 5/8" – 1/2" (15.9 mm – 15.9 mm – 12.7 mm) vertical hole centres. Square-punched holes shall accept cage nut hardware with various threads. Rack mount spaces or units (RMU) shall be 1-3/4" (44.45 mm) high and shall be marked and numbered on the mounting rails. Numbering shall start at the bottom of the rail. Mounting rails shall provide 42 RMU for equipment. Each installed cabinet shall be equipped with a vertical cable manager to store network cables. The vertical cable manager shall attach to the side of the cabinet frame in the space between the frame and the side panel and shall be adjustable in depth to match equipment requirements. The vertical cable manager shall be a U-shaped trough with cable ports along the rear of the manager. The vertical cable manager shall have cable openings along the side that align with each RMU space on the mounting rail. The openings shall be sized to allow 24 patch cords to enter each RMU space. The cable openings shall be separated by plastic T-shaped cable guides to route cables into each RMU space. Each installed cabinet shall be equipped with two horizontal		

	U-shaped cable trays that will connect the vertical cable managers at the front and rear of the cabinet. The trays shall be located along the side of the cabinet frame in between the front and rear vertical cable managers positioned near the top and middle of the cable managers. The trays shall be designed to adjust in depth to match the depths of the front and rear vertical cable managers. Each Cabinet shall be securely bonded to the Telecommunications Grounding Busbar (TGB). Attach a bonding conductor sized as defined in J-STD-607-A between the Telecommunications Grounding Busbar and the cabinet. Attach the bonding conductor to the cabinet using included hardware according to the manufacturer's installation instructions. The installer shall provide the bonding conductor and other necessary hardware required to make the connections between the cabinet and the Telecommunications Grounding Busbar. The cabinet shall include (4) leveling feet, (4) clamps for securing the leveling feet to the floor, a baying kit, and a means for bonding the cabinet to the Telecommunications Grounding Busbar.		
114	Supply and Installation of Aisle Containment Solution for the 12 of the cabinets provided as S. No. 113. The Aisle Containment Solution of modular data center shall consist of end doors and ceilings. The structure shall be prefabricated and shall to comply with fire safety requirements; The end door of a containment solution can be a sliding door or a double door. Ceilings of the containement shall be flat roof ceilings, consisting of side panels, top frames, and revolving ceiling panels. The revolving ceiling panel shall be connected to the top frames through fuse link dowel pins and installed horizontally. In case of fire, the fuse shall be blown and the revolving ceiling panel shall automatically open because of gravity so that Fire Suppression Gas can be spread into the aisle. The Containment Solution shall also integrate the UPS and Inrow Cooling Units to be supplied by the Contractor. External through requirements: Plenty of cable plackets on the top and bottom of the cabinet to support the upper route and underside route both. Signal cable troughs and Power cable troughs are necessary. The lengths of both are extendable, and they route signal cables and power cables respectively. Cable holes are located in the center of each cabinet top cover to simplify cable-routing into the cabinet. When a power cable and a signal cable cross, they are routed from different channels. Holes for binding cables are located at the joints of between the skylight ceiling and the cabinets. The Containment Solution shall include Cable Troughs for Data and Power Cables as necessary including all accessories for Horizontal Cable Management	1	Solution
115	Supply and Installation of Rack-Mount 0U PDU with Power Monitoring, 3 Phase 50Hz/16A IEC60309 Input, 18 x IEC 60320/C13 Outputs and 6 x IEC 60320/C19 Outputs with Ethernet/SNMP Monitoring and Built-In Display for RMS Current Monitoring for each Output and fuses/breakers for branch circuit protection together with any mounting accessories to mount 2 x PDUs in cabinets.	12	№
116	Supply and Installation of Telecommunications Main Grounding Busbar (TMGB) which shall be constructed of .25" (6.4 mm) thick solid copper bar and shall be 4" (100 mm) high and 20" (510 mm) long and shall have 30	2	№

	attachment points (two rows of 15 each) for two-hole grounding lugs with a hole pattern for attaching grounding lugs shall meet the requirements of ANSI-J-STD – 607-A and shall accept 27 lugs with 5/8" (15.8 mm) hole centers and 3 lugs with 1" (25.4) mm) hole centers. The busbar shall include wall-mount stand-off brackets, assembly screws and insulators creating a 4" (100 mm) standoff from the wall. The busbar shall be UL Listed as grounding and bonding equipment.		
117	Supply and Laying of Category 6 (Should support 10 Gbps Ethernet with minimum Alien Crosstalk) 4-Pair 23 AWG UTP Copper Cable with HDPE insulation meeting ANSI/TIA/EIA-568-C requirements. Conductors are twisted in pairs and should include integrated pair divider and placed in a flame retardant PVC jacket. Cable should be laid on pre-installed cable trays in bunches of 12 cables using cable ties at every 3 - 5 feet or ducts/conduits supplied by the Contractor. Cable Bunches should be properly labelled at both ends and at every 50 ft. interval using proper Adhesive Labels (Thermal Transfer or superior labels). Laying should be as per details shown in drawings. Contractor is responsible to cater for all installation supplies/tools. Please note that 24 AWG UTP cable would NOT be acceptable. Each Roll would be in length of 305m/1,000 ft.	6	Rolls
118	Supply and Installation of 48-Port Cat-6 (Should support 10Gbps Ethernet) UTP Patch Panels (Preferably Angular Patch Panels) to meet ANSI/TIA/EIA-568-C Category 6 and ISO 11801 2nd Edition Class E Standards. Should meet requirements for IEEE 802.3at PoE Plus requirements. Should terminate 4-pair 22-26AWG, 100 Ω solid or stranded twisted pair cable. Should utilize 110 punch down termination on back panel and include retention cap for each port. Should mount to standard EIA 19" rack. Each port should be properly labelled using Adhesive Labels or Label Inserts for Port and Panel Identification. (Thermal Transfer or superior labels). Should include Cable Strain Relief Bars with integrated clips or cable tie clips providing support and bend radius protection to each individual cable to be installed with the Patch Panels	4	№
119	Supply and installation of Cat-6 (Shall support 10Gbps Ethernet) UTP Jack Modules to meet ANSI/TIA/EIA-568-C Category 6 and ISO 11801 2nd Edition Class E Standards and IEEE 802.3at PoE Plus requirements. Jack Termination should maintain cable pair geometry and eliminate conductor untwist. Contact should be gold plated and should support termination of 4-pair 22-26AWG, 100 Ω solid or stranded twisted pair cable. Construction should be such that no punch down tool should be required for termination. Strain relief termination cap should be provided. The module should accept 6 and 8 position modular plugs. The jack modules should be installable with single gang One Module/Port, 2 Module/Port or 4 Module/Port Face Plates. Modules and Faceplates should be individually labelled using Adhesive Labels (Thermal Transfer or superior labels) as per TIA/EIA-606-A Standard. The module should be mounted with a Single Gang Face Plate and any mounting accessories should be provided. Jack Block out Insets should be provided for all modules. Modules Should be Snapped In and Face Plates should be Off-White, Ivory or Stainless Steel Finish. Face Plate shall have come with Blank, Snap On cover where Jack Module is not installed. Face Plate shall have space for 1 Jack Module	48	№

120	Supply and Installation of Cat-6 UTP Patch Cords to meet ANSI/TIA/EIA-568-C Category 6 and ISO 11801 2nd Edition Class E Standards. Should meet requirements for IEEE 802.3at PoE Plus requirements. Patch Cords should be constructed of Cat-6 23 AWG UTP Stranded Cable with Gold Plated Contacts. Patch Cords should be labelled at both ends using TIA/EIA-606-A complaint standard adhesive cable labels (Thermal Transfer or superior technology). Please note that 24 AWG UTP cable would NOT be acceptable. Length: 2m.	100	№
121	Supply and Installation of 24 Port Rack-Mount OFC Patch Panel with Pigtails, ST connectors and all accessories for 12 x Multimode Cable and 12 x Single mode Cable. End to End OTDR/OLT Testing with Certified Test equipment Certified hard copies of Optical Loss Testing report should be provided on completion of post-installation of all individual fibre strands in both directions for the wavelengths 850nm, 1300nm, 1310nm, & 1550nm for both SM & MM Fibre.	2	№
122	Supply and Installation of 12 Core Single Mode Type OS2 OFC Cable to be laid in permanently lubricated HDPE Telecom Ducts together with jointing kits and any other accessories that may be required.	150	ft
123	Supply and Installation of 2-core Single mode Type OS2 Ruggedized Patch Cords ST to ST 1m	60	№
124	Supply and Installation of 2-core Multi mode Type OM2 Ruggedized Patch Cords ST to ST 1m	60	№
125	Supply and Installation of Properly Grounded UL Rated 2' Wide Cable Runway	1200	ft
126	Supply and Installation of 1 x Telecom Racks with Double Side 12" Vertical Cable Manager on Either Side of the Rack. Racks shall be Free Standing Relay Racks and shall be manufactured from aluminium and/or steel extrusions. Each rack shall have two L-shaped top angles, two L-shaped base angles and two C-shaped equipment-mounting channels. The rack shall assemble with bolt hardware. Equipment-mounting channels will be threaded for easy assembly. The base angles will be pre-punched for attachment to the floor. Equipment mounting channels shall be 3" deep and punched on the front and rear flange with the EIA-310-D Universal hole pattern to provide 45 rack-mount spaces for equipment. Each mounting space shall be marked and numbered on the mounting channel. When assembled with top and bottom angles, equipment-mounting channels shall be spaced to allow attachment of 19" EIA rack-mount equipment. Attachment points shall be threaded with 12-24 roll-formed threads. The rack shall include assembly and equipment-mounting hardware. Each rack will include 50 each combination pan head, pilot point mounting screws. The assembled rack shall measure 7' (84") high, 24.3" wide, and 15" deep. The sides (webs) of the equipment-mounting channels shall be punched to allow attachment of vertical cable managers along the sides of the rack or for rack-to-rack baying. The rack will be rated for 1,500 lb. of equipment. The rack shall be UL Listed.	1	Solution
143	Supply, Rigging, Installation, Testing and Commissioning of Air Cooled approx. 30 kW Inrow Precision Air Conditioning Units with nominal air flow of low 5500 m^3/hr along with the manufacturer's recommended low noise air cooled condenser units for ambient of over 45° C. Should include 3 stage heater, humidifier, EC Fans, Adjustable Modular Baffle, Filter Clog Sensor/Switch, CW Valve, condensate pump, Remote Rack Sensors, LCD Display, Web/SNMP	2	№

	Monitoring, Networking Capability to network units in N+1 configuration, Smoke Sensor, Hot Gas Bypass, Reheat and Humidity Lockout. The Inrow Unit shall be Digital Scroll, Direct Expansion Type with complete internal redundancy and shall be manufactured specifically for Data Centre applications. All control and monitoring software shall be provided. The refrigerant shall be eco-friendly and shall not be prohibited or discouraged by any Convention/ Protocol/ Agreement to which Pakistan is a signatory. The unit shall have Digital Scroll, which shall modulate and adapt in reaction to the IT equipment's requirements cutting down on start/stop cycling and working with a very high return air temperature shall maximize cooling capacity and increase efficiency. Precision Air Conditioning System shall control the temperature to 22°C ± 1°C and relative humidity to 48% ± 2%. The solution shall be designed for SHR > 85%; > 50 Air Changes per Hour and > 500 cfm/tone. The units shall have Cu/Al DX Evaporator Coil with Thermal Expansion Valve, Filter Drier, Solenoid Valve and Sight Glass, Copeland tandem scroll compressor arranged in VF energy saving configuration. It shall have 3 - stage electric heating at 6kW per stage and Electrode boiler humidifier with proportional controls at 15 kg/h. It shall have Microprocessor controls with auto-restart on power failure Alarm volt-free contacts for BMS interface, routine to allow run and standby configuration. Some other features to be shown through the microprocessor are Dirty Filter, Low Temperature, High Temperature, Smoke Detection, High Humidity, Low Humidity, Leak Detection, High Head Pressure, Low Suction Pressure, Sensor Failure, Loss of Air Flow. It shall have synchronization feature to rotate between 3 x Active and 1 x Standby units based on Environment, Duty Cycle, Maintenance/Running Status and Schedule. Units should have temperature and humidity Control Based on a Set Point which can be Set by the User Interface. Possibility of Setting a Double Temperature set-Point (both in Cooling and Heating) and Humidity Set Point (both in Dehumidification and Humidification) which can be Set Remotely. Units shall include complete Alarm Detection System. Historical Alarm Event Storage. Alarm Signal Contacts which can be Set on the User Interface. Should be capable of Automatic Restart when Power Returns after a Cut Out. Should display Operating Hour Counter and the number of inrush Currents of the Main Components. Graphic Display with Icons Displaying the State of the Unit Components and Showing all of the Values Read by the Probes Connected to the Control Board. Should have the Possibility of Controlling and Managing the Operation and Parameters of the Electronic Thermostatic Valve. In particular the Operation of the Valve can be Checked and can be Modified in Order to Maximize the General Operation of the Circuit or to Correct any Eventual Malfunctions, the Evaporating Pressure/Temperature can be Monitored and therefore the Unit Operation can be Checked. The Possibility of Selecting Forced Timed Flushing of the Humidifier if the Water Quality is not High.		

	The Contractor shall supply, install, test and commission Refrigerant Pipes (Liquid + Gas) for Precision A/C units with expanded rubber foam Insulation in PVC Conduit (Class D), Flushing, Gas Charging, Hangers, Support and Brackets, complete in all respect and ready to operate. To include manufacturer's recommended size Cu Pipe in insulation, Dura Duct and Manufacturer recommended Gas Charging. For safety and support of Refrigerant pipes, it must be enclosed in trays. The Contractor shall also supply and install 1" UPVC Condensate Drain Water Piping and Fittings with Insulation to the designated sump and 1" UPVC Water Piping and Fittings for Humidifier from the designated water source. The refrigerant piping, drain piping and humidifier piping shall be up to 100'. The Contractor shall submit a detail Air Balancing Report after witness by the Purchaser's designated representative of the Precision A/C units.		
144	Supply and Installation of Ceiling Cassette Type Air Conditioner (Reversible) with remote controller and plasma filter (990 cfm, 40,000 BTU/Hr) with R410A Refrigerant and Condensate Pump. Should include capability to provide status, on/off and temperature control to the BMS using Modbus or other standard interface. Should include capability to provide status, on/off and temperature control to the BMS using Modbus or other standard interface.	4	№
145	Supply and Installation of Air Curtain (4' wide) without Controller and Filter.	1	№
146	Supply and Installation of Exhaust Fans (200 cfm) with J Type Duct.	1	№
147	Supply, Laying, Installation, Testing and Commissioning of 4 - Core 50 mm^2 PVC/PVC LT Flame Retardant Flexible Cable to be laid in ducts/trays as required. Should also include 88 x Lugs, 16 x Boots, 16 x Brass Glands and heat shrink sleeves for the supplied cable as required	180	m
148	Supply, Installation, Testing and Commissioning of 4 - Core 16 mm^2 Flexible Flame Retardant PVC Cable 600/1000 Volts grade laid in ducts/trays as required. Should also include Lugs, Boots, Brass Glands and heat shrink sleeves for the supplied cable as required	60	m
149	Supply, Installation, Testing and Commissioning of 1 - Core 6 mm^2 Flexible Flame Retardant PVC Cable 600/1000 Volts grade laid in already installed cable tray or PVC ducting – Green Color for Earthing. Should also include Lugs, Boots, Brass Glands and heat shrink sleeves for the supplied cable as required	120	m
150	Supply, Installation, Testing and Commissioning of 5 - Core 6 mm^2 PVC/XLPE Flame Retardant Flexible Cable laid in already installed cable tray or PVC ducting. Should also include Lugs, Glands for the supplied cable as required	100	m
151	Supply, Installation, Testing and Commissioning of 3 - Core 2½ mm^2 PVC/PVC Flame Retardant Flexible Cable laid in already installed cable tray or PVC ducting	200	m
152	Supply, Installation and Commissioning of 30 kW Modular UPS in N+1 Parallel Redundant Configuration (30 kW is the actual load; additional modules would be required for N+1 configuration). The UPS shall include Battery Bank to provide a minimum of 30 minutes backup at full load installed in matching battery cabinets. The UPS solution shall	1	Sets (each N+1 30kW solution is one

	include System Tie Panel to connect all UPS Modules. The offered solution shall include Integrated System Bypass Module, Maintenance Bypass, Input Circuit Breaker and provision for Emergency Power Off (EPO) together with manufacturer's recommended EPO switch. The UPS shall be True Online Double Conversion True Sinewave type. Each UPS Module shall have built-in Synchronizing/ Parallelizing Technology, Ethernet Interface with Web/SNMP for remote monitoring. The offered solution shall include software for Management, Monitoring and Logging. All accessories for turnkey installation and commissioning should be included. The UPS shall be for three phase 380V – 415V 50Hz input and shall have tolerance of ± 3Hz on Frequency and ± 10% on voltage with an Output Voltage Variation of no more than ±2% and a Short Circuit Capacity of at least 2000A for 250ms. The UPS shall have internal back feed protection and shall support an overload of 125%. The UPS shall have Double Conversion Topology and load should be transferred to inverter in case of power failure in less than 2 msec. The UPS shall have efficiency of up to 95% at nominal load. The UPS have low input current harmonics with THD(i) of 3 – 5% in nominal load conditions. The UPS shall be Transformer free with IGBT Rectifier supporting adjustable power walk-in, adjustable input current limits, adaptive input current limitation and load step limitation. The UPS shall have Maintenance Bypass. The UPS shall have active front-end rectifier. The UPS shall have digital self-diagnostics to prevent system failures and shall have Automatic transfer to bypass or battery power. The UPS shall have Microprocessor controlled Battery Management feature to hold batteries at intelligently rest rather than on float most of the time to prevent corrosion in the battery electrolyte and to automatically check batteries for accurate failure protection. The UPS shall support Automatic Temperature compensation for batteries to adjust VRLA charging voltage according to temperature by decreasing voltage as the temperature increases. The UPS shall support Paralleling and Synchronising for true N+1 redundant configuration with independent load sharing and NO single point of failure due to communication of single UPS module failure. The redundancy shall NOT be with a Master-Slave configuration. All Batteries shall be Valve Regulated Lead Acid (VLRA) type and shall be Maintenance Free type with no need for topping-up of water or electrolyte during its service life. Batteries offered shall have a minimum design life of ten (10) years at 20 °C and shall be UL Certified have Absorbent Glass Mat Separator and shall be in a Flame Retardant, Leak and Spill Proof Container. Batteries shall have a very low internal resistance of less than 6 mΩ when fully charged at 25 °C and shall be able to withstand a Short Circuit Current of 2500A. Batteries shall support an operating temperature range of 0 °C to 50 °C and shall have a Nominal Voltage of 12 V. Battery Cabinets shall provide adequate protection (in the form of MCCB, Relays etc.) from Overcharging, Excess Voltage, Excess Current, Excess Heat and Earth Leakage. Battery Cabinets shall provide provision for Fire/Smoke Detector and Air Quality Sensors to be mounted in the Cabinets and connected to the BMS System.		set)
153	Supply and Installation of 3 Phase 100 kVA Microprocessor based Line Conditioner offering Voltage	1	№

	to include Digital Voltage Stabilizer for an input voltage of 3PH+N 380/220 or 400/230 VAC selectable with a range of ± 20% (from 3x 285V up to 3x 500V L - L) providing an output voltage of 3PH+N 380/220 or 400/230 VAC with an accuracy of ± 0.5%,input and output circuit breakers, Isolation Transformer providing complete galvanic isolation between the mains and the load obtained with a Delta/Zigzag input isolation transformer, Class 1 Transient Voltage Surge Suppressor/Arrestor for Lightning Currents, Class 2 Transient Voltage Surge Suppressor/Arrestor for Service Over Voltages, EMI Filter (100 dB in 10kHz to 10 GHz frequency range) and a manual change-over maintenance bypass switch, disconnecting switch with fuses and a multi-task digital network analyser providing information regarding the status of the line downstream the voltage stabiliser, such as phase and linked voltages, current, power factor, active power, apparent power, reactive power, etc. The Digital Voltage Stabiliser shall have three separate control circuits, individually regulate each phase and are therefore suitable for unbalanced lines and load unbalance between phases. The Line Conditioner shall be in IP54 housing. The Line Conditioner shall have a frequency range of 45 – 65 Hz, it should have an admitted load variation from 0% to 100% and admitted load unbalance of up to 100% and it should support mains waveform distortion increment of < 0.2%. It shall be Natural Air Cooled and should support ambient temperatures of -15℃ to +45℃ and Relative Humidity of up to 95%. It shall have an admitted overload capacity of 200% for 2 minutes. The Voltage Stabiliser shall be sensed by solid state electronics and servo mechanical motor controlled and it shall have admitted load variation of 0 to 100% and shall support admitted load unbalance of up to 100%. It shall have a correction speed of < 20 ms/V and a harmonic distortion of < 0.2 % - nil and none added. It shall have Input/Output multi-task digital network analyzers installed to provide monitoring & measurement of electrical values, energy metering as phase and linked voltage, current, frequency, power factor, active and apparent powers, reactive powers with digital display. It shall lightning protection against spikes/surges - Imax 40kA TVSS class I + II. It shall have Circuit breakers for overload and short circuit protection on the regulation circuit (itself) and Voltage regulator protection breaker controlled by thermal probes in case of temporary overload. It shall have connectivity options for adjustment and setting the voltage regulator parameters and shall have an Ethernet/SNMP interface. It shall have soft start and soft stop functions given by super-capacitor system for safe load supply at start-up and shall have alarms for minimum and maximum voltages, maximum current and over-temperature, ventilation failure. It shall have manual change over incorporated by-pass switch and should be fitted with an automatic bypass system which trips automatically in case of overload, still maintaining the load supplied (although with a not stabilised voltage). The protection opens the connection between the voltage regulator and the buck/boost transformer, closing at the same time in short-circuit the transformer primary winding. By doing so, the transformer voltage drop is cancelled and the user can be supplied the		

	mains voltage without interruption. In order to encourage an inspection on the stabiliser and an investigation on the cause of the intervention, the protection can be reset only manually. The isolation transformer shall be a dry type three phase transformer and shall have a rated input voltage of 400V having 3ϕ 400 VAC Primary Winding and 3ϕ + N 400 VAC on load Secondary Winding. The connection shall be Dyn11, the insulation class shall be Class H and the insulation level shall be 3kV offering galvanic isolation between primary and secondary winding and an electrostatic shield between the windings. The transformer shall have an additional integrated reactance magnetic core between the windings to offer a short-circuit voltage of up to 50% of the rated input voltage and shall have a K-factor value of K13 having H class electrolytic copper and annealed aluminium. The transformer should have UL approved insulation and H class UL approved polyester resin for in-vacuo impregnation.		
154	Supply, Installation, Testing and commissioning of water cooled Diesel Generating Set including all associated equipment & panels, the set shall be producing a minimum 100 kVA (at an operating voltage of 415/240 at 50 cycles per second for a three phase four wire system suitable for 50 °C ambient temperature tropicalized under site condition when running at a speed of 1500 rpm. The set shall be having the diesel engine, alternator, with water-cooling system with heavy duty engine mounted radiator, Controller Panel, Electronic Governor, Exciter, Batteries, Battery Trays, Battery Leads, Filters for air, fuel and lube oil all other accessories mounted on a common base frame enclosed in manufacturer's supplied original acoustic canopy (72 dBA at a distance of 1 meter) and shall be supplied complete with exhaust system with double industrial type silencers, flanges, engine exhaust pipes, anti-vibrating mounting pad, complete in all respect and confirming to all standard specifications. The generator sets shall come with Echelon or Modbus based Remote Monitoring Solution for Generator Sets providing monitoring capabilities with the necessary Software and Base Fuel Day Tank for 24 hour operations. Initial Oil Change, Diesel Fuel for testing purposes and Full Day Tank of Diesel Fuel would be the responsibility of the Contractor. The fuel tanks shall have level sensors for indication of fuel levels.	1	№
155	Supply and Installation of Main Storage Tank to store diesel fuel for 100 kVA Diesel Generator Sets for a continuous period of 48 hours together with piping and Pumps for transferring fuel from Main Storage Tank to Generator Fuel Tank. The Storage Tank shall come with appropriate Fuel level sensor for accurate non-contact level monitoring unit display of fuel levels. The fully encapsulated sensor/transmitter is temperature compensated. Installation shall require no programming or calibration. No maintenance is required. Should be integrated with BMS System	1	Solution
156	Provision of Earthing to provide less than 2 Ω Resistance to include Earth Terminal Point and all necessary earthing arrangements.	6	Jobs
157	Supply and Installation of Power Distribution Frame for supplying power to the PDU's in each of the 7 cabinets (5 kW each). Should include the necessary Power Cabling, Cable Pathways and any other accessories required. Each power input in a PDF provides an electricity tester to measure the voltage, current, frequency, power, and power factor of the three-phase AC power. The measured parameters are	1	Solution

	reported to the monitoring system over the RS485 port. Configured with Overload protection and short circuit protection system; Lightning protection level: C level or above; Support surge protection.		
158	Supply, Installation, Testing and Commissioning of Main panel to include the following: a) 2 x 200Amps motorized electrically and mechanically interlocked MCCB 4 pole adjustable RC 50 KA with UVT and EVR on the incoming side which include Communications and shall also includes the following components • 6 x 2 Amps Protection fuses • 1 x DIGITAL Energy Analyzer with building KWHr meter • 1 x VSS (RY-YB-BR-OFF-RN-YN-BN) • 1 x Current Transformers • 3 x R-Y-B Indication lamps • 100A 65kA Surge Protection Device (Type1 + Type 2) • 1 x AMF Controller b) 5 x Control Relays with base c) 4 x Timers with base d) 1 x Manual Change Over Switch e) 1 x 250 Amps TPole MCCB Adj RC- 50kA on the outgoing side with motorized control, communication for BMS System including MCH, UVT, Shunt trip, closing coil, timer etc f) 2 x 160 Amps TP MCCB Adj RC-50kA on the outgoing side with motorized control, communication for BMS system including MCH,UVT, Shunt trip, closing coil, timer etc g) 7 x 60 Amps TP MCCB Adj RC-50kA on the outgoing side with motorized control, communication for BMS system including MCH,UVT, Shunt trip, closing coil, timer etc The Switchgear shall be suitable for surface mounting. It shall be totally enclosed, dust and damp proof. The Switchgear shall be complete in all respects with material and accessories, factory assembled, tested and finished according to the Specifications and to the normal requirements. All components shall be installed on a common mounting plate inside the enclosure and protected from the front with screwed sheet steel front plate. The enclosure shall be provided with rubber gasketting and a lockable hinged door with cam fastener. The distribution board shall be supplied complete with all installation materials as recommended by the manufacturer. The incoming and outgoing cable connections shall be according to the wiring requirements. If required, an adapter box for accommodating the cables and conduits may be provided. The box shall be of the same material and finish as the distribution board. The cabling inside shall be suitably harnessed by means of straps or cords. An earth bar or terminal strips shall be provided for connection of incoming and outgoing earth conductors. The earth bar or terminals shall be permanently connected to the body of distribution board at two points. The Switchgear shall be IP 44.	1	№

The latest editions of the following standards and codes shall be applicable for the materials specified within the scope of this Section :

a. BS 4752-1 - Triple Molded Case Circuit Breaker
b. BS 3871 - Single and Triple Miniature Circuit Breaker
c. IEC 157
d. VDE 0641
e. IEC 157 & 158 - Low Voltage Switch gear and Control gear
f. IEC 439 - Factory Built Assemblies of LV Switch gear
g. IEC 4752 - Switch gear and control gear for Voltages up to & including 1KV
h. BS 88 - HRC Fuses
i. IEC 73 - Colors for indicator lights and push buttons.
j. IEC 446 - Identification of insulated/bare conductors

The bus bars shall be made of high conductivity electrolytic copper and shall be completely isolated and mechanically braced for the specified fault level. The phase identification of bus bars shall be by colors applied on bus bars and these shall be red, yellow and blue for phase and white for natural. The earth bus bar shall be green. The bus bars shall be triple pole and neutral and shall be of appropriate size to meet the electrical and mechanical requirements of the system. The temperature rise shall not exceed 45 degrees centigrade at rated current.

Circuit breaker shall be three or four pole as required with microprocessor based protection and shall respond to true RMS value of waveform including harmonic distortion within the neutral pole. Circuit breakers shall comply with EN 60947 part 2 utilization category B and to IEC947 Part 2. Circuit Breakers shall be draw out type, with interlocks to prevent moving a closed breaker into or out of the connected position. Circuit Breakers shall be equipped with a grounding device to solidly ground the framework before the main disconnecting contacts are engaged and to maintain the grounding, until after the contacts have separated. CB shall be electrically operated, with key switch mounted on the faceplate. CB trips shall be completely self-powered with no external control power source required. CB shall be provided for protection against overload, short circuits with time delay and earth faults and have the following functions:

a. Adjustable long time delay trip - 0.5 to 1.0 x Normal Current Rating
b. Adjustable short time delay trip - 1.5 to 8.0 x Normal Current Rating
c. Instantaneous trip - 2.0 to 10.0 x Normal Current Rating

	d. Ground fault trip - Earth Fault e. Circuit breakers shall be provided with trip circuit supervision relays. CB shall be complete with a digital monitor to enable the following measurements to be read on the breaker. a. Phase current. b. Ground fault current. c. Long time delay trip current/line d. Short time delay trip current/line e. Instantaneous trip current. f. Ground fault trip current/line. Where specified CB shall be electrically inter locked to allow only one CB to be 'ON' at any given line & will have 100% automatic operation. Push buttons shall be momentary make break contact type (normally open/normally close). These shall be suitable for flush mounting. Distribution board, plastic face plate etc. Push buttons shall have round/square head. These shall be of red color for 'ON' and green color for 'OFF' operations. The Contractor shall provide the necessary glands, lugs, heat shrink tubes and boots as required for turnkey installation. The Contractor shall perform MegOhm Testing for Cable Insulation and Submit the Reports.		
159	Supply, Installation, Testing and Commissioning of HVAC Distribution Board to include the following: a) 2 x 60 Amps MCCB 3 pole Adjustable RC 50 KA on the incoming side which includes Mod Bus and also includes the following components a) 6 x 2 Amps Protection fuses b) 3 x R-Y-B Indication lamps c) 1 x 0-500Volts AC DIGITAL Voltmeter d) 1 x 0-400 Amps AC Digital Ammeter e) 2 x Contactors b) 5 x 60Amps MCCB 1 pole RC 55 KA on the Outgoing side	1	№
160	Supply, Installation, Testing and Commissioning of D.B to include the following: a) 1 x 60 Amps MCCB 3 pole RC- 15KA on the Incoming side which includes Modbus for the BMS system a) 6 x 2 Amps Protection fuses b) 3 x R-Y-B Indication lamps c) 1 x 600/5Amps Current Transformers d) 1 x 0-500Volts AC DIGITAL Voltmeter e) 1 x 0-630 Amps AC Digital Ammeter b) 8 x 16 Amps MCB RC-10KA single pole on the Outgoing side with Contactors	2	№
161	Supply, Installation and Commissioning of Data Centre Monitoring System to provide integrated status monitoring and control of the HVAC, Power, Surveillance and Access Control and Fire Protection Systems including complete environment monitoring providing real time status displays, reports and alarms. Should support IP. Should provide a standard platform that supports flexible configurations, high scalability, and management by layer. Should also provide	1	Solution

	necessary I/Os to connect all sensors procured, get Generator status, fuel level status and connect all MCCB with communications interfaces. Should be a comprehensive Data Centre OS that should also include Data Centre Infrastructure Management solution and BI Analytics and Reporting tool.		
162	Supply and installation of Room Temperature and Humidity Sensors with 4-20mA or 0-10VDC output and range of 0 to 50 °C and 0 to 100% r.h. preferably with display	16	№
163	Supply and installation of Room Air Quality Sensor with 0-10VDC or 4-20mA output and Volatile Organic Compounds Sensor to detect and measure mixed gases	2	№
164	Supply and installation of Door Contact Sensors	24	№
165	Supply and installation of RS485 Tinned copper, Foamed FEP - Foam Fluorinated Ethylene Propylene insulation, twisted pairs. Overall Beldfoil Aluminium foil-Polyester Shield. 24 AWG stranded tinned copper drain wire. Overall tinned copper braid shield (90% coverage). Natural FA - Flamarrest jacket.	100	M
166	Supply and installation of 3 core shielded 1 mm^2 PVC cable CY type for Control Applications.	100	M
167	Supply and Commissioning of GPRS Modem to integrate with Monitoring System provided as S.No. 166 for sending alerts by SMS on any mobile network operating in Pakistan with good signal coverage at the project site.	1	№
168	Supply and Installation of NOC Monitoring Solution to include 2 x LCD/LED 42" screens.	1	Solution
169	Supply and Installation of Blade Servers Solution to include 6 x Servers each with 2 x Intel Xeon 4-Core 2.20 GHz Processors (or equivalent), 16 GB DDR-3 RAM (expandable to 256GB), 2 x 150 GB hot plug HDD with appropriate RAID controller supporting RAID 0, 1 and 5, 2 x Gigabit Ethernet Ports with support for TCP offload and iSCSI. The Blade Servers shall be installed in appropriate Blade Chassis with N+N Fully Redundant Power Supplies and Cooling on each chassis, 2 x Ethernet Switch with 48 Gbps Switching Fabric to connect all Blade Servers on GbE with 4 x 10GbE uplink or 8 x GbE uplink in the Chassis in a fully redundant configuration. Must include all required optics/SFPs. The offered solution shall include System remote management software that should support browser based Graphical Remote Console; Remote boot using USB / CD/ DVD Drive and should be capable to offer upgrade of software and patches from a remote client using Media / image/ folder; The offered solution shall include Systems Management Software that should help provide proactive notification of actual or impending component failure alerts on critical components like CPU, Memory and HDD. The Blade Servers should be housed in Blade Chassis as per the solution requirement needed to house the required number of blade servers in smallest number of chassis. Blade Chassis shall support simultaneous housing of Ethernet, 10 Gigabit Ethernet, infiniBand, FC, iSCSI interconnect fabrics offering Hot Pluggable and Redundancy. The Blade Chassis should provision for a single console to monitor multiple enclosures. The Blade Chassis should be populated fully with power supplies of the highest capacity available with the vendor. Power supplies should support N+N as well as N+1 redundancy configuration. Each blade enclosure should have	1	Solution

	a cooling subsystem consisting of redundant hot pluggable fans or blowers enabled with technologies for improved power consumption and acoustics. Each blade enclosure shall have management solution that shall provide the functionality to plan capacity and power continuously, balance across physical and virtual resources. Each blade enclosure shall have management solution that shall help in providing high availability and provisioning of infrastructure consistently across physical and virtual resources. The offered solution shall include the necessary management software are required. The offered solution shall include a Virtualised operating system (OS) for all of the Blade Servers. The Virtualised OS will be utilized to provide technical functions, such as virtualization and resource management and scheduling. Virtualization technology integrates resources into a resource pool, which allows virtualized IT resources to be allocated flexibly, thereby meeting requirements of different services. Core values of virtualization consist of improving resource usage, reducing IT environment deployment costs, shortening service rollout periods, and optimizing system availability. The OS used in must consist of the following functional modules to meet preceding requirements and comply with industry standards. Virtualization software based on x86 architecture (Intel Architecture or equivalent) servers is to be provided. The software uses a bare metal architecture to meet software and hardware decoupling requirements. The software is used in IT resource virtualization, including central processing unit (CPU) virtualization, memory virtualization, IO virtualization, and storage virtualization. In addition, the software supports hardware-assisted virtualization technology, such as Intel VT-X/VT-D and EPT (or equivalent). A resource management system that is matched with virtualization software is to be provided to allocate physical and virtual resources and support operation and maintenance (O&M) management. O&M management functions of hardware, software, and services are provided. The O&M management system cooperates with the resource management system to implement the all-rounded O&M capability of hardware, software, and services. In addition, the O&M management system supports friendly web user interface (UI) maintenance interfaces, user right- and domain-based management, high security, fault prevention and automatic recovery capabilities, software high availability (HA), and high availability to reduce impact on systems and services due to faults. The O&M management system also supports automatic system configuration backup to avoid system data loss and supports Virtual Machine (VM) snapshots so that VMs can be created and recovered by using snapshots. The O&M management system provides users with data backup functions, supports alarm email and SMS real-time notification to help users to monitor systems in a timely manner, supports log records to facilitate auditing and fault processing, and supports flexible configuration and reports. The offered solution shall also include 4 x Windows 2008 Server licenses to be implemented on the Virtualised OS.		
170	Supply and Installation of Rack Mount Servers with Dual	2	№

	Intel® Xeon® 4 core, 1.60 GHz Processor (or equivalent), 4 GB RAM, 2 PCIe slots, 2 x 2 TB SAS/SATA HDD, 1U or 2U with Redundant Power Supplies, 10/100/1000 Mbps UTP Network Interface. Should come with Microsoft Windows Server Enterprise 2008. Contractor must implement Microsoft Active Directory on the Servers.		
171	Supply, Installation and Configuration of iSCSI SAN with 12 TB Raw Capacity using 2TB 6Gbps 7,200 rpm SAS HDD having redundant 10Gbps iSCSI interfaces. SAN solution shall support Snapshot, Capacity free snapshot without locking the disk space, Full physical copy (Cloning), LUN Copy and Asynchronous as well as Synchronous remote replication functions. The offered solution shall be scalable to minimum of 200 drives. The SAN Controllers shall be true active-active so that a single logical unit can be shared across both controllers at the same time. Offered Storage Array shall be configurable in a No Single Point of Failure configuration including Array Controller card, Cache memory, FAN, Power supply etc. Offered storage array shall have minimum of 4 device ports or 16 SAS lanes for Servers and disk connectivity. The storage array should support hardware based RAID 0, 0+1, 1, 0+5 and 6 levels. Storage System shall have the capability to create a single raid volume of at-least 24TB at storage controller level. Offered storage array shall support intermixing of both Small form factors (SFF) as well as large form factor drives (LFF) inside the array. Offered storage shall support dynamic expansion of both Raid set and disk group on both controller and host level as per defined policies. Offered storage array shall have native virtualization support so that Raid 1. Raid 5, Raid 1+0, Raid 6 can be carved out from a logical space instead of dedicating separate physical disks for each application. Every supplied disk shall be able to participate into multiple and different raid sets simultaneously. In case of power failure, storage subsystem shall have the Capability to keep the uncommitted information inside cache for at-least 96 hours or in a de-staged fashion. Bidder shall ensure that in case of de-stage mode, Dual redundant Standby power supplies are configured. Storage shall be offered with performance management software. Storage subsystem shall be offered with Thin Provisioning software and License for the complete offered capacity. The storage array should have support controller-based snapshots functionality for pointer-based snapshots (At-least 48 copies), Capacity free snapshots without locking the required disk space and full physical copies. Storage subsystem shall support non-disruptive online volume migration from one tier to another tier and from one raid set to another raid-set without any interruption into host operations. Offered storage shall support non-disruptive online firmware upgrade for both Controllers and disk drives. The storage array should support hardware based data replication at the array controller level across all models of the offered family. The Storage array shall support Continuous Asynchronous Replication to DR location instead of buffering inside cache at Primary location for better	1	Solution

	Recovery time objective. The storage array should support industry-leading Operating System platforms & clustering including: Windows Server 2008, VMWARE and Linux. The storage array should support only Real time / UNIX based operating system, dual, redundant, hot-pluggable; active-active array controllers with high performance RISC based CPUs.		
172	Supply, Installation and Commissioning of Core Ethernet Switch. Each Core Ethernet shall have full Layer-3 functionality and fully Redundant N+N Power Supplies, Shall be a Multi-layer switch with modular and scalable architecture. The Core Switch shall have 4 x 10GbE ports, 24 x 1Gbps Copper Ethernet ports. The Core Switch shall have hardware-based Layer 2 failure detection, Hardware Ethernet OAM, Hardware-based Layer 3 fault detection, Individual Process Management without restarting Switch. The Core Switch shall support STP (802.1d), RSTP (802.1w) MSTP (802.1s) functionality, VLAN and 802.1Q VLAN Tagging functionality, 802.1p Class-of-Service (CoS) Tagging or Q-in-Q (802.1ad), 802.3ad Link aggregation with LACP, Switch management through Secure Shell(SSH) version-2, Network Time Protocol (NTP) version 3, SNMP Version 2c and Version 3 functionality, Configuration upload and Download using SFTP/TFTP/ Web Interface, Port Mirroring across the line cards and Modules of the switch, Unidirectional Link Detection on Fiber interfaces, Static Routing, Dynamic Routing (RIPV2, OSPF,BGP), Standby routing protocol (VRRP and other propriety protocols), Source/Policy based Routing functionality, Broadcast storm control at port level , IP Multicasting and IPV6 functionality, VRF and optional Multi Protocol Label Switching (MPLS) functionality. The switch shall support AAA Radius, NetStream/S-Flow/NetFlow/IPFIX and similar functionality, Capable to detect and drop the traffic from spoofed IP Address, Port Based security functionality, VLAN within VLAN (MUX VLAN) functionality, Spanning-Tree Protocol security feature, BPD Guard, BPDU Filter and Root Guard, Dual Power supplies with Full Redundant Functionality, Redundant Fans, Hot-swappable field-replaceable power supplies, fan modules, and expansion modules. All Optics and Installation Accessories shall be provided by the Contractor.	1	№
173	Supply, Installation and Commissioning of L2 PoE switch with 48 Port 10/100 and 2 x Gigabit Ethernet Uplink Ports with base Layer 3 Functionality to include N+N Redundant Power Supplies and Cooling.	1	№
174	Supply, Installation and Commissioning of IP MPLS Edge Routers with 4 x 10/100 Ethernet Ports and 2 x PRI Ports to include N+N Redundant Power Supplies and Cooling. Layer 3 forwarding Performance (64-byte packet size) should be 2.0 Mpps. Support of all the module hot swapping.	1	№
175	Supply, Installation and Configuration of Deep Packet Inspection Firewall with Integrated IPS with 2 x 10Gbps Ethernet Interfaces, 8 x 1Gbps Ethernet Interfaces, High Availability Active-Active Configuration Support. Should include any subscriptions required. Shall have Stateful Firewall, IPSec VPN, IPS Capability. The firewall performance shall be 20 Gbps with 6 Gbps IPS performance	1	№

	and 6 Gbps AES256+SHA-1 / 3DES+SHA-1 VPN performance. Should support 2 Million concurrent sessions and at least 150,000 new sessions per second. The Firewall shall support at least 40,000 security policies. There shall be no restriction on the number of users. The solution shall support virtual routers and VLANs. The solution shall support application identification and classification providing a deep understanding of application behaviors and weaknesses to prevent application borne threats that are difficult to detect and stop. The solution shall provide visibility for application usage and bandwidth, enforcement to block/allow applications, application control and prioritization and protection against DoS, DDos and botnet attacks. The solution shall use protocol and context information and signatures to identify applications and identify applications running on top of or embedded into approved and trusted services and protocols. The solution shall support fine-grained policies including application security, based on user role and identity for all endpoints. It shall inspect HTTP traffic encrypted in SSL on any TCP/UDP port. It shall support IPS, IPSec VPN, NAT, QoS, routing, and switching. It shall support policy based bandwidth management. IPS capability shall provide Worm Mitigation. The Firewall shall support Network attack detection, DoS and DDoS protection, TCP reassembly for fragmented packet protection, Brute force attack mitigation, SYN cookie protection, Zone-based IP spoofing, Malformed packet protection and the IPS shall support Stateful protocol signatures, Attack detection mechanisms: Stateful signatures, protocol anomaly detection (zero-day coverage), application identification. The Attack response mechanisms shall include Drop connection, close connection, session packet log, session summary, email, custom session. The Attack notification mechanisms shall include Structured syslog. The IPS shall support Worm protection, SSL encrypted traffic inspection, Trojan protection, Spyware/adware/keylogger protection, Other malware protection, Protection against attack proliferation from infected systems, Reconnaissance protection, Request and response side attack protection, and shall detect based on both stateful signatures and protocol anomalies. It shall be able to create custom attack signatures with 500+ Access contexts for customization, Attack editing (port range, other), Stream signatures, Protocol thresholds, Stateful protocol signatures, covering more than 6000 number of attacks covered, Detailed threat descriptions and remediation/patch info. It shall create and enforce appropriate application-usage policies. It shall support attacker and target audit trail and reporting and shall support Inline as well as TAP deployment mode. The Firewall should have unified threat management system with IPS (Deep Inspection firewall), Protocol anomaly detection, State-full protocol signatures, IPS/Deep Inspection attack pattern obfuscation and External URL filtering.		

176	Supply and installation of PC with Intel Core i5 Processor (3.06 GHz or higher) (or equivalent), 4GB RAM, 150GB HDD in Small Form Factor with 21" LED/LCD Monitor. USB Keyboard and mouse should be included. MS Windows 7 Professional Operating System shall be pre-installed.	2	№
177	Supply and Installation of IP based KVM solution for 8 servers to include a rack-mount 17" LCD monitor with integrated keyboard and pointing device.	1	Solution

ICT Infrastructure at District Property Record Centres/Customer Facilitation Centres

S.No.	Requirement	Qty	Unit
178	Supply of Edge Router, Firewall, 16 Port 10/100/1000 Ethernet Switch and VPN appliance with Stateful Firewall, IPSec VPN, IPS, Anti Virus and Web Filtering Capability. The Router shall have at least 4 x Gigabit Ethernet Interface and shall support DSL interfaces. The router shall have 1 Gbps traffic handling capacity. The Firewall shall have 1 Gbps Stateful Firewall capacity. Should support AES256+SHA-1 / 3DES+SHA-1 VPN performance of 300 Mbps. Should support 100,000 concurrent sessions and at least 5,000 new sessions per second. The Firewall shall support at least 4,096 security policies. There shall be no restriction on the number of users. The IPS shall support 200 Mbps traffic The solution shall support virtual routers and VLANs. The solution shall support application identification and classification providing a deep understanding of application behaviors and weaknesses to prevent application borne threats that are difficult to detect and stop. The solution shall provide visibility for application usage and bandwidth, enforcement to block/allow applications, application control and prioritization and protection against DoS, DDos and botnet attacks. The solution shall use protocol and context information and signatures to identify applications and identify applications running on top of or embedded into approved and trusted services and protocols. The solution shall support fine-grained policies including application security, based on user role and identity for all endpoints. It shall inspect HTTP traffic encrypted in SSL on any TCP/UDP port. It shall support IPS, IPSec VPN, NAT, QoS, routing, and switching. It shall support policy based bandwidth management. IPS capability shall provide Worm Mitigation. The switch shall support at least 4 x IEEE 802.3af PoE ports. It shall support cFlow/sFlow or equivalent. The switch shall support IEEE 802.1D MAC Bridges, IEEE 802.1p Priority, IEEE 802.1Q VLANs, IEEE 802.1v VLAN classification by Protocol and Port, IEEE 802.1w Rapid Reconfiguration of Spanning Tree, IEEE 802.3ad Link Aggregation Control Protocol (LACP), IEEE 802.3af Power over Ethernet, IEEE 802.3x Flow Control, IEEE 802.1AB Link Layer Discovery Protocol (LLDP), SNMPv1/v2c/v3, IEEE 802.1X Port Based Network Access Control.	30	№
179	Supply of Rack Mount Servers with Intel® Xeon® 4 core, 1.60 GHz Processor (or equivalent), 4GB RAM, 2 PCIe slots, 2 x 2TB SAS/SATA/SSD HDD, 1U or 2U, 10/100/1000 Mbps UTP Network Interface Must come with Microsoft Windows Server 2008 Standard.	54	№

Training Services

S.No.	Requirement	Qty	Unit
180	On-Site On Job Training for up to ten (10) Purchaser's engineers and technicians for all of the supplied equipment including implementation, operations, configuration and field maintenance of the system as per the requirements laid out in Section 0	1	Package
181	The contractor shall offer following formal foreign trainings to the purchaser's personnel. Training Costs, Tuition, Travel, Boarding and Lodging would be the responsibility of the contractor. Foreign Training: a) CDCP & CDCS training for 4 persons b) ITIL Foundation for 4 persons c) Information Security Management System for 4 persons d) Facilities Operation training for 32 persons (local training)	1	Package

SLA and Operations Support

S.No.	Requirement	Qty	Unit
182	Providing SLA and Operations Support of the whole system for one (1) year providing engineering staff on-site on a 24 x 7 basis to take care of any faults arising in the system as per the requirements in Section 0	1	Year

Professional Services

S.No.	Requirement	Qty	Unit
183	Development of SOPs for operations and routine maintenance of the entire Data Centre facility including all the components like HVAC, Power, Earthing, Fire Protection, Surveillance and Access Control and BMS etc. The SOPs will be submitted, to be adopted by Purchaser's Data Centre O&M Team as per the recommendations of the Contractor.	1	Job
184	Development of Detailed Network Configuration Plan for the Purchaser's ICT Infrastructure	1	Job

Connectivity

S.No.	Requirement	Qty	Unit
185	2 Mbps Data Connectivity over terrestrial link between the Data Centre at Karachi and DR facility at Hyderabad for a period of six (6) months on Redundant Fault Tolerant Network to be provided by reputable Data Network Operators/OFC Network Owners to include the CPE and any other equipment required	1	Job
186	512 kbps Data Connectivity over terrestrial link between the Data Centre at Karachi, DR facility at Hyderabad and the District Facilitation Centres at each of the 27 Districts in Sindh for a period of six (6) months on Redundant Fault Tolerant Network to be provided by a reputable Data Network Operators/OFC Network Owners to include the CPE and any other equipment required	1	Job

Payment Terms

The payment terms shall be as follows:

S. No.	Payment Milestone Description
1	15% of the total contract cost shall be released against Mobilization advance Guarantee of equivalent percentage.
2	10% of contract value shall be released on submission of detail design of the DR, DRC and Facilitation Centres subject to deduction of mobilization advance proportionately.
3	10% of contract value shall be released on submission of validation of detail design of the DR, DRC and Facilitation Centres by 3rd Party Audit EPI/UPTIME or equivalent parameters subject to deduction of mobilization advance proportionately.
4	25% of 35% of contract value shall be released on submission of Bill of Lading of Hardware of DR, DRC and Facilitation Centres subject to deduction of mobilization advance proportionately.
5	25% of 35% of contract value shall be released on submission of Inspection Report of Hardware of DR, DRC and Facilitation Centres at port subject to deduction of mobilization advance proportionately.
6	50% of 35% of contract value shall be released on delivery of Hardware of DR, DRC and Facilitation Centres at sites subject to deduction of mobilization advance proportionately.
7	3% of contract value on submission of Training schedule from the Institute for the Foreign Training component.
8	2% of contract value on successful completion of Training from the Institute and certificates of the same for the Foreign Training component.
9	15% of contract value shall be released on complete installation and Commissioning of DR, DRC and Facilitation Centres subject to deduction of mobilization advance proportionately.
10	20% of contract value shall be released on operational and testing by EPI/UPTIME or equivalent parameters of DR, DRC subject to deduction of mobilization advance proportionately.
11	5% of contract value on successful completion of SLA period.

Table 1: Payment Terms

- The Advance Payment Guarantee shall be valid for a period of six (6) months and shall be renewed upon Purchaser's request as needed until the advance is fully adjusted. The Advance Payment Guarantee may be reduced proportionately upon delivery of hardware/software components. The Advance Payment Guarantee/ Performance Bond shall become null and void and shall be surrendered by Purchaser to the Bidder/Contractor upon issuance of Acceptance Certificate.8

- The Performance Guarantee/Performance Bond from AA rated Company @ 5% of the contract value shall be valid for a period of twelve (12) months.

- Advance Payment Guarantee shall be issued by a scheduled bank in Pakistan acceptable to the Purchaser.

- The payments shall be processed upon presentation of the following documents by the Bidder/Contractor:

a) Commercial invoice issued by the Bidder/Contractor
b) Delivery Note duly countersigned by Purchaser or authorized representative
c) Any other documents stipulated in the Contract
d) Sales Tax Paid Invoice where applicable
e) Customs Clearance/Duty Paid Documents where applicable

- Payments shall be made promptly by Purchaser within thirty (30) days of submission of an invoice/claim by the Contractor supported with necessary documents.
- All payment will be made in Pakistan Rupees.
- Partial delivery and partial payments against partial would be allowed.
- The type, method and conditions of payment to be made to the Contractor under his Contract shall be specific in the Contract. The Contractor's request's for payment shall be made to Purchaser in writing, accompanied by an invoice describing, as appropriate, the goods delivered and services performed, duly verified by the Project Director of Purchaser or his designated representative(s) and fulfilment of other obligations stipulated in the Contract. Purchaser or any other designated office shall pay the invoice.
- The total amount to be paid to the successful Contractor shall be the Contract price adjusted to give effect to such additions there to and deductions there from as are provided under the conditions of Contract.

Withholding Tax

- The Bidders are hereby informed that the Purchaser shall deduct tax as prescribed under the tax laws of Pakistan, from all payments for goods supplied and services rendered by any Bidder who signs a Contract with the Purchaser.

Support and Warranties

- The Bidders should mention the warranties they propose for products and services to be rendered.
- The Bidder shall provide warranty, support and maintenance as stipulated in section 0.
- The Bidder shall include the cost of any spares that the Bidder would require the Purchaser to buy in order to meet the desired SLA in the bid price. A detailed list of all such spares including part numbers, description and quantities should be provided.

Ownership

- The ownership of all products, intellectual property and services rendered under any Contract arising as a result of this RFP will be the property of the Purchaser.

Governing Law

- This RFP and any Contract executed pursuant to this RFP shall be governed by and construed in accordance with the laws of Pakistan. The Government of Pakistan and all Bidders responding to this RFP and parties to any Contract executed pursuant to this RFP shall submit to the exclusive jurisdiction of the Pakistani Courts.

Contractor's Negligence

- The Contractor shall indemnify Purchaser in respect of all injury or damage to any person or to any property and against all actions, suits, claims, demands, charges and expenses arising in connection herewith which shall be occasioned by the negligence or breach of statutory duty of the Contractor, any sub-Contractor before whole of the project has been finally accepted.

Delays in Performance

- Delivery of the goods shall be made by the Contractor in accordance with the time schedule specified in the Contract.
- Delay by the Contractor in performance of its delivery/project completion obligations shall render the Contractor liable to any or all of the penalties including but not limited to liquidate damages, the

Contractor shall promptly notify Purchaser in writing of the fact of the delay, its likely duration and its causes(s). As soon as practicable after receipt of the Contractor's notice, Purchaser shall evaluate the situation and may at its discretion extend the Contractor's time for performance in which case the extension shall be ratified by the parties by amendment of the Contract.

Contractor's Default

- If the Contractor neglects to perform the Contract with due diligence and expedition or refuses/or neglects to comply with any reasonable orders given to him in writing by Purchaser or any of his authorized representative in connection with the performance of the Contract or shall contravene the provision of the Contract, Purchaser may give notice in writing to the Contractor to make good the failure, neglect or contravention complained of.

- Should the Contractor fail to comply with the said notice, with a reasonable time from the date of service thereof, it shall be lawful for Purchaser to terminate forthwith the Contract by notice in writing to the Contractor without prejudice to any rights which may have accrued under the Contract to either party prior to such termination

- If the Contractor fails to complete any of his obligations under the paragraph titled "DEFECTS REMOVAL" within the time granted by Purchaser under "FORCE MAJEURE" and Purchaser shall have suffered any loss from such failure, Purchaser may be entitled to deduct from the Contract price at the rate of up to a half per cent (1/2 %) of the individual delayed part/item/service which cannot in consequence of the said failure be put to the use intended for such work for each week between the time fixed in the Agreement (except as aforesaid) and the actual date of completion, subject to a maximum deduction of 5% of the value of the Contract.

Warranty, Support and Maintenance

- The Contractor shall warrant that the goods supplied under the Contract are new, un-used, of the most recent or current models and incorporate all the latest improvements in design and materials unless provided otherwise in the Contract.

- The Contractor shall further warrant that all goods supplied under this Contract shall have no defect arising from design, material or workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.

- This warranty shall remain valid for a period of one (1) year from the date of delivery for each component (unless specifically mentioned otherwise in the BoQ) stipulated in the Bidding Documents.

- Purchaser shall promptly notify the Contractor in writing of any claims arising under this warranty.

- Upon receipt of such notice, the Contractor, with all reasonable speed replace the defective goods or part thereof, without any costs to Purchaser including the cost of inland delivery of the repaired replace goods or parts from the port of entry to final destination.

- If the Contractor, having been notified, fails to remedy the defect(s) within a reasonable period, Purchaser may proceed to take such remedial actions as may be necessary, at the Contractor's risk and expense and without prejudice to any other rights which Purchaser may have accrued or will accrue to Purchaser against the Contractor under the Contract.

- The Contractor has to offer on line registration (where applicable) of the supplied products and related items from the manufacturer/principal to Purchaser and similarly will ensure that all the back to back arrangements are reflection of the SLA signed with the Purchaser. The warranty and maintenance should also be registered from the manufacturer or principal and demonstrated as such to the Purchaser.

- The Contractor has to offer comprehensive Warranty, Support and Maintenance inclusive of parts for repair and replacement aligned with the desired SLA for a period of one (1) years inclusive of any PM (Preventive Maintenance during warranty) wherever required.

- The Contractor shall offer maintenance, support with components as well as repair/ replacement under a Support Package as offered by the Principals/OEM that best meets the requirements wherever possible.

- The repair/replacement shall include the hardware, parts and components maintenance, all software upgrade, patch serving and technical support.

- The Contractor shall repair or replace hardware component or full equipment within four (4 to 6) weeks of the failure if the equipment or part of it to be sent to overseas for maintenance. During this period to fulfil the Contract requirements, the Contractor shall provide backup support to fill the gap due to faulty item(s) to ensure continuity of operations, for which any emergency and temporary adjustment required in the infrastructure will be done by the Contractor.

- The Contractor shall perform Preventive Maintenance on a quarterly basis or at the manufacturer's recommended frequency for all Project equipment supplied following Manufacturer's recommendations for Preventive Maintenance. Supplying any consumables would however NOT be the Contractor's responsibility and would be chargeable to the Purchaser on "at actual" basis.

- The Contractor shall maintain an emergency On-call team of skilled technicians / engineers equipped with necessary tools round the clock for the emergency fault calls.

- The Contractor shall be responsible to maintain a logbook for each incidence recording the work done at each visit and get it verified by the Purchaser. All defects, replacement of parts, work done etc. shall be recorded. The format of logbook will be mutually agreed between Contractor and Purchaser.

- The Contractor shall submit the following reports to Purchaser on a quarterly basis, which should be submitted as a supporting document for recurring payment claims;
  a) Routine visit report

b) Fault calls reports.
c) Rectification Report.
d) List of replacement / repair of parts.

- The Contractor shall provide full support during and after the warranty period including the technical support with reporting time, hardware and spare parts as well as components replacement in case of failure and upgrade of new firmware and patches as in Table 4 below.

Table 4 below defines the Service Level Agreement (SLA) that the Contractor has to adhere to. The SLA is drafted categorizing the incidents as follows:

a) Severity 1 (Red) — Operations are "down" due to a very critical or total hardware or its component failure and which has a critical impact to the operations.

b) Severity 2 (Orange) — Operations of any of the segment are down, severely degraded, or significant aspects of operations are negatively affected by hardware/firmware/software failure or inadequate performance of the products. The setup or its component or the subjected component is running on backup system in a compromised status.

c) Severity 3 (Green) — Operational performance of the supplied system(s) is compromised while most business operations remain functional. Information or assistance is required with the supplier/manufacturer of product capabilities, installation, or configuration. There is little or no effect on your business operations.

RED (Severity 1)	**ORANGE (Severity 2)**	**GREEN (Severity 3)**
Reporting Time: On-Site 24 hours x 7 days	Reporting Time: Within 6 hours 8 hours x 6 days	Reporting Time: Within 24 hours
• Analyse, troubleshoot, repair, replace and provision of backup hardware component within 24 hours. • In case of failure of full equipment replacement or provision of backup unit within 24 hours by on site certified engineer. • 24-hour a day local support from supplier and international support from expert technicians via internet or phone/fax till the problem is completely resolved or backup is provided and restored. • Claim of Advance replacement from the principal of hardware to be placed for components or for the whole equipment by an onsite certified engineer. • Technical assistance via manufacturer website or on telephone if supplier is unable to resolve the issue within 24 hours.	• Analyse, troubleshoot, repair, replace and provision of backup hardware component within 48 hours. • In case of full equipment failure replacement or provision of backup unit by certified engineer within one week of the fault reported. • Registered login to online tools in case of severity level. • Claim of Advance replacement from the principal of hardware to be placed for components or for the whole equipment by an onsite certified engineer. • Technical assistance via manufacturer website or on telephone if supplier is unable to resolve the issue.	• Analyse, troubleshoot, provide technical help on phone or visit the site within 24 hour. • If diagnosed a component or the unit as faulty repair, replace and/or provision of backup hardware component or full equipment within 3 weeks of the fault reported. • All firmware/software updates and upgrades within 3 weeks to fix this issue or on purchaser request

Table 2: SLA

- In case the Contractor fails to comply with the committed SLA, it would be entirely the Purchaser's prerogative to impose penalties upto a maximum of the cost of faulty equipment or the remaining value

of the Performance Guarantee, which ever is less and claim the amount against the Performance Guarantee.

Operations Support

The Contractor shall be responsible for Operations Support of the whole system at both locations, as per the following requirements:

a. **The Contractor shall completely operate the system for one (1) year from the date of commissioning of the system**

b. **The Contractor shall provide its engineering staff on-site for the Data Centre at Karachi and Disaster Recovery facility at Hyderabad on a 24 x 7 basis**

c. **The engineering staff shall provide support for all systems and take care of any faults**

d. **A senior Supervisor/Manager shall be available as a single point of contact for the Purchaser's staff**

e. **The operations support team shall include 1 x NOC engineer each during the 8am – 4 pm shift, 4 pm – 12 am and 12 am – 8 am shifts at Karachi and Hyderabad.**

f. **An Electrical and HVAC Engineer should be available on a 24 x 7 basis.**

g. **A Network Engineer with CCNP (or equivalent) and a Systems Engineer should be available on a 24 x 7 basis.**

h. **Support staff shall be available such that they are able to provide support at the Property Record Centres/Customer Facilitation Centres at each of the 27 Districts in the province of Sindh within the same day on working days during working hours at any of the 27 centres.**

i. **Sufficient staff shall be available to manage rotation of the Personnel such that the required NOC staff is at job on a 24 x 7 x 365 basis.**

j. **The Contractor shall clearly indicate in the proposal the number of staff which will be employed by the contractor to operate the system for one year including their qualifications, roles and responsibilities. All cost associated with system operation shall be separately indicated in the bid. The Contractor shall also clearly indicate the staff or support required from Purchaser for assistance in operation if any**

Training

On Job Training

The Contractor has to offer a comprehensive training program both On-Site during implementation and operation training to Purchaser's engineers and technicians for all of the supplied equipment and shall include implementation, operations, configuration and field maintenance of the system. The training schedule will be mutually agreed upon. The training should be for up to ten (10) engineers/technicians.

The Contractor shall indicate following in the proposal:

a. **Training Requirements: The contractor shall recommend the training required for Purchaser's staff for complete operation, and field maintenance of the system. It shall include the list of courses, duration, location of the training centre offering the course, number of trainees for each course and complete cost including boarding and lodging for each course.**
b. **Trainees Qualification: The contractor shall also recommend the prequalification required for each course if any and assist Purchaser in selection of trainees for system operation.**
c. **Training Methodology: The contractor may plan on job training for Purchaser's staff.**

Formal Training

- **The Contractor shall offer following formal foreign trainings to the Purchaser's personnel. Training Costs, Tuition, Travel, Boarding and Lodging would be the responsibility of the Contractor.**

Foreign Training:

a) CDCP & CDCS training for 3 persons
b) ITIL Foundation for 7 persons Contract/Financial Management for 7 persons
c) Information Security Management System for 5 persons

Local Training

a) Facilities Operation training for 32 persons (Travel, Boarding and Loading would be the client responsibility however contractor will arrange the class room and instructor).

Documentation

- The Contractor shall submit all necessary installation, technical, troubleshooting, maintenance and preventive maintenance manuals, CDs etc. and keep on updating the Purchaser for all related technical updates.

- The Contractor shall submit two (2) hard copies of As-Built drawings, layout and shop drawings, tagging details and three (3) soft copies in CD.

- The Contractor shall submit all software CDs/download links, License Keys and Activation Codes for all components to the Purchaser. Please NOTE that all Licenses and Activation codes should be issued by the vendor in the name of Board of Revenue, Government of Sindh.

- The Contractor shall submit detailed Acceptance Test Plan (ATP) for all components for the project to be accepted by the Purchaser.

- The Contractor shall develop detailed SOPs (Standard Operating Procedure) for the Purchaser's Operators to follow in order to support and ensure optimal operations of the system.

Technical Guidelines

- The following General Guidelines should be followed by the Contractor:

Technological Requirements

- Latest Generation Equipment: All equipment supplied shall be brand new, in perfect working order and represent the manufacturer's latest generation of production equipment.
- Used, re-furbished or re-certified equipment would NOT be acceptable.
- Any equipment sourced through Grey Market Channels would NOT be acceptable.
- All equipment shall be OEM & OED, i.e. the equipment should not be re-badged

Use of Materials

- Rubber and Plastic Materials: All rubber and plastic materials shall have a high resistance to degrading atmospheric and climatic elements. This resistance shall be maintained during the entire lifetime of the equipment.
- Wire Insulation: All wire insulation shall be made of a material that shall not produce gasses, which have a harmful effect on personnel or equipment. As far as possible the insulation material shall sustain fire.
- Harmful Substances: The equipment shall not contain any substances which are harmful to health, or which might exude harmful components in the course of time.
- Dangerous Materials: If it is unavoidable to use elements that could cause danger to personnel or the environment if not used in their designed manner, these shall be specified indicating the risk and shall be clearly marked near to the component concerned. Within technical documentation, including parts lists components containing substances injurious to health shall be clearly indicated.
- Incompatible Materials: Materials, which are chemically or electro-mechanically incompatible, shall not be used where there is the possibility of interaction. The Bidder shall provide details on dissimilar metal combinations that could cause any electrolysis.

Equipment Construction

- Equipment construction shall be such that all necessary maintenance access to, and replacement of field replaceable units shall be possible without hinging or tilting arrangements to the Nodes.
- Termination of the outer conductor of cables at the equipment end shall be made in a manner such that it shall be possible for this normally earthed conductor to be isolated from earth, if required. This provision may be required to avoid circulating earth leakage currents
- Use of Dummy Panels: All unused equipment positions and other openings shall be covered with dummy panels.
- Protection from Accidental Damage: All equipment shall be free from sharp edges, burrs, slivers and deformities. Covers shall be provided to protect from accidental damage from moving objects.
- Loose Wiring: Loose wiring shall not be permitted. All wires and cables shall be securely attached to the wall or the rack and protected
- Unit Labelling: Each individual unit and its front panel controls and indicators shall be properly identified by simple symbols or labels in English.
- Power Supply Connections: All earth and power connections to the equipment shall be provided by suitably sized plugs/connectors or other secure terminating method.
- Connector Types: In order to avoid possible service outages as a result of equipment connectors becoming loose due to vibration, it is mandatory that all connectors between equipment shall be of the bayonet or screw type or some form of locking connector.

- Labelling of Equipment: All equipment shall be clearly labelled with equipment type and production serial number. Each unit and sub-rack shall be clearly marked with the manufacturer's article number (or code). This number shall comply with drawings and with references in the hand-book. In addition to the article number, each module shall be marked with serial number and a date indicating the production batch.

- Language: All labelling, engraving and other marking shall be in English or in recognized international symbols and shall be done in a durable, wear resistant way. Stick-on labelling is not acceptable. A detailed description of proposed labelling shall be given

- Location of Equipment: It shall be possible to locate all components in the equipment by reference to the appropriate documentation or marked photographs. All test points, cable tie points, DIP-switches, U-links or other settable features in the equipment shall be marked with the same designation as on the appropriate drawings and the descriptions of equipment.

- Environmental Requirements: The construction of all equipment shall be such that it is capable of withstanding, without any damage or deterioration, the normal conditions of mechanical and environmental stress imposed during normal transport, handling and storage.

Termination of Contract

Termination of Contract for Default

Purchaser may, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Contractor terminate this Contract in whole or in part;

1. If the Contractor fails to deliver any or all of the goods within the time period's specified in the Contract or any extension thereof granted by Purchaser; or

2. If the Contractor fails to perform any other obligation under the Contract; or

3. If there is evidence that the Contractor has supplied goods or Services evading Sales Tax, due Customs Duties and any other levies; or

4. If the Contractor, in either of the above circumstances, does not cure its failure with in a period of sixty (60) days (or such long period as Purchaser may authorize in writing) after receipt of the default notice from Purchaser.

5. In the event Purchaser terminates the Contract in whole or in part, Purchaser may procure, upon such terms and in such manner as it deems appropriate, goods and services similar to those un-delivered, and the Contractor shall be liable to Purchaser for any excess costs for such similar goods and services. However, the Contractor shall continue performance of the Contract to the extent not terminated.

Termination for Insolvency

- Without prejudice or affecting of any right action or remedy which has accrued or will accrue there-after to Purchaser, Purchaser may at any time terminate the Contract by giving written notice to the Contractor, without compensation to the Contractor if the Contractor becomes bankrupt or otherwise insolvent.

Liquidated Damages

- If Contractor fails to deliver any or all of the goods or perform the services within the time period (s) specified in the Contract, Purchaser shall without prejudice to its other remedies under the Contract, shall have the right to claim liquidated damages and Contractor shall pay to Purchaser as liquidated damages with respect to those delayed goods an amount equal to 0.25% of the value of the goods delayed for each week of delay or part thereof until actual delivery or performance up to a maximum deduction of 5% of the Contract price. Once the maximum is reached, Purchaser may consider Termination of Contract.

- The value of all goods or part supply of goods made which are incomplete and therefore not utilized by Purchaser in its operations, shall also be added for the purpose of liquidated damages. Any liquidated

damages if not paid in cash by Contractor shall be deducted from the invoice (s) submitted by Contractor. The imposition of liquidated damages upon the Contractor and its payment shall not absolve the Contractor/supplier from its obligations to deliver or from any other liabilities or obligations under the Contract.

Amicable Settlement

- Purchaser and the Contractor shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with Contract.
- The Contract will be construed under and governed by THE LAWS OF THE ISLAMIC REPUBLIC OF PAKISTAN.
- Except as otherwise provided in the Contract, any difference, dispute or question arising out of or with reference to the Contract which cannot be settled amicably shall within (30) thirty days from the date of either party informs the other in writing that such difference, dispute or question exists be referred to arbitration.
- The arbitration shall be conducted in accordance with the rules of procedure set forth in the Pakistan Arbitration Act 1940 subsequently amended.
- The arbitration of the majority of the arbitrators shall be final and binding on both parties.

3 - Work Plan / Delivery Schedule

Task#	Milestone	Start	Max Duration (Working Days)	Responsibility
1	Availability of space for Data center at Karachi and DR at Hyderabad and Project office space	On contract signing	10	
2	Submission of Design Documents (HLD, LLD and SLD)	After task 1	30	Contractor
3	3rd party validation of design documents	After task#2	10	
4	Incorporation of changes in proposed Design Document	After task#3	5	Contractor
5	Approval of design doc	After task#4	5	Client
6	Hardware ordering (electro mechanic, network, ICT infrastructure,)	after task #5	7	Contractor
7	Submission of PAT Documents	After task#5	15	Contractor
8	Approval of PAT Doc	After task#7	5	Client
9	Suggestions for PAT Changes	After task#8		Client
10	Incorporation of PAT changes	After task#9	2	Contractor
11	Civil works	After task #5	20	
12	Hardware delivery	After completion of task#6	96	
13	Installation and commissioning of H/W	After task#12	30	Contractor
14	Software deployment Integration/Commissioning /testing	After task#13	15	AOS
15	PAT initiative /execution	After task#10 and Task #13	10	Contractor
16	PAT Discrepancies sign off	After completion of task#15	2	Contractor/client
17	Removal of PAT Discrepancies	After completion of task#16	15	Contractor
18	Verification of removed PAT discrepancies.	After completion of task#17	5	Contractor/client
19	3rd party technical audit	After task#18	2	Contractor
20	Inspection of Fully functional Data center and DR site.	After task#19	2	Client or inspection team
21	Trainings nominations	After contract signing	5	Client
22	Training Schedule	After Task#1	5	Contractor
23	Training	After Task#1	As required	Client
24	SLA 1 year	After Task#20	365	Contractor

APPENDIX B - KEY PERSONNEL

[redacted]

List of The Core Team Member of the Project--Project Team

S. No.	Staff Member Name	Title	Project Position	Certificates Attached
Project Management				
1	Abdul Qadir	Director Technical	Consultant	
2	Syed Azfar Ali	CTO	Project Director	
System Designing				
5	Samar	Project engineer	System Designing	Microsoft Certified Professional, Microsoft Certified Systems Engineer
Data Centre Solution				
6	Khawaja Syed Raisuddin Ahmed	Project Manager	Data Centre Solution	HVAC,DC System(Rectifire), PDU, Gen-Set, Fire System,Liquid Tect Monitoring System,
Networking				
7	Ather A Baig	Manager Networks & Hardwar	Manager Networks & Hardwar	JNCIEP,JNCIS,CCNA
9	Syed Zeeshan Ali	Senior IP Engineer	Networking	CCNA, CCNP
Servers and Storage / NOC				
10	Rizwan	Asst. Manager Data Center	NOC	SAN certified
Security analysis and testing				
11	Waqas	Supervisor Security Analysis	Security analysis and testing	CDCS/ CDCP
3	Rehan	Security Engineer	Security analysis and testing	CISSP
Installation and Commissioning				
12	Hassan Nawabi	Supervisor	Installation and Commissioning	
Implementation / Civil				
13	Fayz Ali Bashir	Civil Supervisor	Civil	
14	Taskeen Ahmed Khatri	Supervisor	Implementation	
Training				
15	Javed	Admin/Finanace/training	Manager Admin/Finanace	

APPENDIX C- SERVICES AND FACILITIES PROVIDED BY THE CLIENT

Roles and Responsibilities

PMU Board of Revenue, Sindh

1. PMU BOR ensures that District Revenue Administration will provide Temporary office space at Karachi and Hyderabad (subject to the availability).
2. PMU BOR will coordinate with the District Administration to ensure that a representative at Data center Karachi and disaster recovery center Hyderabad during the execution of project.
3. PMU BOR will liaise with the District Revenue Administration to ensure the site access for connectivity and delivery of hardware at district sites,
4. PMU BOR will provide full support to Contractor for Administrative matter i.e provision of electricity on all sites for the project.

APPENDIX D- PERFORMA FOR BANK GUARANTEE FOR ADVANCE PAYMENT

To:

PROJECT MANAGEMENT UNIT, BOARD OF REVENUE, GOVERNMENT OF SINDH, PAKISTAN

In accordance with the provisions of the Conditions of Contract "Establishment of Data Centre, Disaster Recovery Centre and and connectivity 27 Facilitation Centres for Revenue Property Records of Sindh Province", **Project Management Unit, Board of Revenue, Government of Sindh**, contract Clause -------- ("Terms and Conditions of Payment") of the above-mentioned Contract, Accountancy Outsourcing Services (Pvt.) Ltd. (hereinafter called "the Service Provider") shall deposit with Project Management Unit, Board of Revenue, Government of Sindh a Bank Guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of Pak Rupees /- (Pak Rs. only).

We, the Bank----------, as instructed by the Service Provider, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to Project Management Unit, Board of Revenue, Government of Sindh on his first demand without whatsoever right of objection on our part and without his first claim to the Service Provider, in the amount not exceeding Pak Rupees ---------- --- only)

We further agree that no change or addition to or other modification of the terms of the Contract or of Services to be performed there under or of any of the Contract documents which may be made between Project Management Unit, Board of Revenue, Government of Sindh and the Service Provider, shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any such change, addition, or modification.

This Guarantee shall remain valid and in full effect from the date of the advance payment under the Contract directly to the Bank Account ---------- of the service provider maintained at the NAME of BANK and BRANCH by you until Project Management Unit, Board of Revenue, Government of Sindh receives full repayment of the same amount from the Service Provider or till the date ---------- whichever is earlier.

This guarantee shall expire on ----------

Yours truly,

Signature and seal: _____

Name of Bank/Financial Institution: ----------

Address: _____

Date: _____

APPENDIX E - COMPLIANCE STATEMENT & 3RD PARTY PARAMETERS

7.1.1 Data Centre at Karachi

S. No.	Description	Quantity/ Licenses	Proposed Solution (Vendor/ Product/Model)	Compliance (FC/PC/NC)	Remarks
1	Precision Milled Anti-Static Vinyl Tile Flooring	N/A	Imported	FC	
2	Anti-Static Carpet Tile		Imported	FC	
3	Anti-Static Static Dissipative Epoxy Flooring		Imported	FC	
4	Dampa ceiling		Imported	FC	
5	painting of 3 x coats of paint		Local	FC	
2	12mm imported Tampered Glass		Imported	FC	
7	Fire resistant Data Centre steel doors		Imported	FC	
8	Electric Operated Automatic Glass Bi Parting Sliding Door Mechanism		Imported	FC	
9	Genset Foundation Pad		Local	FC	
10	Reception Desk		Interwood/equivalent	FC	
11	Desk		Interwood/equivalent	FC	
12	Filing Cabinet		Interwood/equivalent	FC	
13	hydraulic chairs		Interwood/equivalent	FC	
14	Visitor Chairs		Interwood/equivalent	FC	
15	Two Seat Sofa Sets		Interwood/equivalent	FC	
16	Hi-Voltage Electric Fence		Securecom /SC-EFE06/equilent	FC	Made in canada
17	42U Free Standing Equipment Cabinets		Emerson / APC	FC	
18	Hot Aisle Containment Solution		Emerson / APC	FC	
19	Rack-Mount 0U PDU		Emerson / APC	FC	
20	Telecommunications Main Grounding Busbar		Imported	FC	

21	4-Pair UTP Copper Cable		3m	FC	
22	UTP Patch Panels		3m	FC	
23	UTP Jack Modules		3m	FC	
24	UTP Patch Cords		3m	FC	
25	24 Port Rack-Mount OFC Patch Panel		3m	FC	
26	12 Core Single Mode Type OS2 OFC Cable		3m	FC	
27	2-core Single mode Type OS2 Ruggedized Patch Cords		3m	FC	
28	2-core Multi mode Type OM2 Ruggedized Patch Cords		3m	FC	
29	UL Rated 2' Wide Cable Runway		Local	FC	
52	Air Cooled		Emerson /APC	FC	
53	Air Flow (8,500 – 8,700) m3/hr, Precision Air Conditioning Units		Emerson /APC	FC	
54	Ceiling Cassette Type Air Conditioner		Mitsubishi/equilent	FC	
55	Air Curtain		Acson or equilent	FC	
56	Exhaust Fans		Local	FC	
57	Core 70 mm2 PVC/PVC LT Flame Retardant Flexible Cable		Beldin/FR cable	FC	
58	4 - Core 16 mm2 Flexible Flame Retardant PVC Cable		FR cables	FC	
59	1 - Core 6 mm2 Flexible Flame Retardant PVC Cable		FR cables	FC	
60	5 - Core 6 mm2 PVC/XLPE Flame Retardant Flexible Cable		FR cables	FC	
61	3 - Core 2½ mm2 PVC/PVC Flame Retardant Flexible Cable		FR cables	FC	
62	Modular UPS		Emerson Liebert /APC	FC	

63	3 Phase 150 kVA Microprocessor based Line Conditioner		Ortea/ ITALY or equilant	FC	
64	water cooled Diesel Generating Set		Perkins-leroy somer EU	FC	
65	Main Storage Tank to store diesel fuel		Local	FC	
66	less than 2 Ω Resistance to include Earth Terminal Point		Local	FC	
67	Lightning Arrestor Solution		Local	FC	
68	Power Distribution Frame		Schneider/Terasaki	FC	
69	Power Distribution Boxes		Schneider/Terasaki	FC	
70	Main panel		Schneider/Terasaki	FC	
71	HVAC Distribution Board		Schneider/Terasaki	FC	
72	D.B		Schneider/Terasaki	FC	
73	Data Centre Monitoring System		Emerson/APC	FC	
74	Temperature and Humidity Sensors		Emerson /APC	FC	
75	Room Air Quality Sensor		Emerson/APC	FC	
76	Door Contact Sensors		Emerson/APC	FC	
77	Tinned copper, Foamed FEP - Foam Fluorinated Ethylene Propylene insulation		Imported	FC	
78	3 core shielded 1 mm2 PVC cable CY type		Beldin	FC	
79	GPRS Modem		Tac Compitable	FC	
80	NOC Monitoring Solution		Samsung or equivalent	FC	
81	Blade Servers Solution		Dell/M620 Blade Servers/HP blade 460c gen8 including c7000 enclosure/CISCO	FC	
82	Rack Mount Servers		Dell/R420/HP DL360E Gen8/CISCO	FC	
83	Windows Server CALs		Microsoft	FC	
84	SQL Server 2008 Enterprise Licenses		Microsoft	FC	
85	FC SAN		EMC/VNX5500/HP P6550EVA	FC	
86	of Privileged user management and brokerage software solution		Vmware/Vcenter/	FC	

87	Data Loss Prevention solution		McAfee/DLP4400/CA	FC	
88	Core Ethernet Switch		Juniper/EX8200/CISCO	FC	
89	L2 PoE switch		Juniper/SRX3400/CISCO	FC	
90	IP MPLS Edge Routers		Juniper/J6350/CISCO	FC	
91	Deep Packet Inspection Firewall		Juniper/SRX3400/CISCO	FC	
92	PC with Intel Core i5 Processor			FC	
93	Anti-Virus, Vulnerability Assessment, Threat Management Solution and Network Traffic Analysis Solution		McAfee/Endpoint protection,Vulnerability Manager,Web Application Assessment,Application Control/CA	FC	
94	Network Fault Management Solution		Riverbed/Cascade/HP Open view/CISCO	FC	
95	Thermal Transfer		Imported	FC	
96	Earth Ground Testing Meter		Imported	FC	
97	of 2' x 2 LED Light Panels		Imported	FC	
98	IP based KVM solution		Imported	FC	

7.1.2 DR Facility at Hyderabad

S. No.	Description	Quantity/ Licenses	Proposed Solution (Vendor/ Product/Model)	Compliance (FC/PC/NC)	Remarks
99	Precision Milled Anti-Static Vinyl Tile Flooring		Imported	FC	
100	3 x coats of paint		Imported	FC	
101	24" x 24" Anti-Static Carpet Tile with tufted textured loop construction		Imported	FC	
102	imported Dampa 0.7 mm ceiling		Imported	FC	
103	2' x 2 LED Light Panels		Imported	FC	
104	2-Hour Fire resistant Data Centre steel doors		Imported	FC	
105	Genset Foundation Pad 8' x 16' on existing RCC Floor		Local	FC	

106	High Quality Officer Desk 48" x 36" x 30"		Interwood/equilent	FC	
107	High Quality Reception Desk 48" x 36" x 30"		Interwood/equilent	FC	
108	High Quality Filing Cabinet in lamination finish 20" x 36" x 30"		Interwood/equilent	FC	
109	High quality officer's hydraulic chairs		Interwood/equilent	FC	
110	Visitor Chairs matching with the Officer Chairs		Interwood/equilent	FC	
111	Two Seat Sofa Sets with back in Leatherette		Interwood/equilent	FC	
112	commissioning of Hi-Voltage Electric Fence		Interwood/equilent	FC	
113	42U Free Standing Equipment Cabinets		Emerson/APC	FC	
114	Aisle Containment Solution		Emerson/APC	FC	
115	Rack-Mount 0U PDU		Emerson/APC	FC	
116	Telecommunications Main Grounding Busbar (TMGB)		Imported	FC	
117	4-Pair 23 AWG UTP Copper Cable		3m	FC	
118	UTP Patch Panels		3m	FC	
119	UTP Jack Modules		3m	FC	
120	Cat-6 UTP Patch Cords		3m	FC	
121	Port Rack-Mount OFC Patch Panel		3m	FC	
122	12 Core Single Mode Type OS2 OFC Cable		3m	FC	
123	2-core Single mode Type OS2 Ruggedized Patch Cords		3m	FC	
124	2-core Multi mode Type OM2 Ruggedized Patch Cords		3m	FC	
125	Properly Grounded UL Rated 2' Wide Cable Runway		3m	FC	
126	1 x Telecom Racks with Double Side 12" Vertical Cable Manager		Emerson/APC	FC	
143	Air Cooled approx. 30 kW Inrow Precision Air Conditioning Units		Emerson/APC	FC	

144	Ceiling Cassette Type Air Conditioner (Reversible)		Mitsubishi/equilent	FC	
145	Air Curtain (4' wide) without Controller and Filter		Acson	FC	
146	Exhaust Fans (200 cfm) with J Type Duct.		GFC	FC	
147	4 - Core 50 mm2 PVC/PVC LT Flame Retardant Flexible Cable		FR Cables	FC	
148	4 - Core 16 mm2 Flexible Flame Retardant PVC Cable		FR Cables	FC	
149	1 - Core 6 mm2 Flexible Flame Retardant PVC Cable		FR Cables	FC	
150	5 - Core 6 mm2 PVC/XLPE Flame Retardant Flexible Cable		FR Cables	FC	
151	3 - Core 2½ mm2 PVC/PVC Flame Retardant Flexible Cable		FR Cables	FC	
152	30 kW Modular UPS in N+1 Parallel Redundant Configuration		Emerson/APC	FC	
153	3 Phase 100 kVA Microprocessor based Line Conditioner		Ortea Italy	FC	
154	water cooled Diesel Generating Set		Perkins-leroy somer EU	FC	
155	Main Storage Tank to store diesel fuel for 100 kVA Diesel Generator Sets		Local	FC	
156	of Earthing to provide less than 2 Ω Resistance		Local	FC	
157	Power Distribution Frame		SchneiderTerasaki	FC	
158	Main panel		Schneider/Terasaki	FC	
159	HVAC Distribution Board		Schneider/Terasaki	FC	
160	D.B		Schneider/Terasaki	FC	
161	Data Centre Monitoring System		Tac Schneider	FC	
162	Room Temperature and Humidity Sensors		Emerson/APC	FC	

163	Room Air Quality Sensor with 0-10VDC or 4-20mA output and Volatile Organic Compounds Sensor		Emerson/APC	FC	
164	Door Contact Sensors		Emerson /APC	FC	
165	RS485 Tinned copper, Foamed FEP - Foam Fluorinated Ethylene Propylene insulation, twisted pairs		Emerson/APC	FC	
166	3 core shielded 1 mm2 PVC cable CY type for Control Applications.		Beldon	FC	
167	GPRS Modem to integrate with Monitoring System provided as S.No. 166		SCWC 101	FC	
168	NOC Monitoring Solution to include 2 x LCD/LED 42" screens		Imported	FC	
169	Blade Servers Solution		Dell/M620 Blade Servers/HP blade 460c gen8 including c7000 enclosure/CISCO	FC	
170	Rack Mount Servers		Dell/R420/HP DL360E Gen8/CISCO	FC	
171	iSCSI SAN		EMC/VNX5500/HP P6550EVA	FC	
172	Core Ethernet Switch		Juniper/EX8200/CISCO	FC	
173	L2 PoE switch		Juniper/EX4200/CISCO	FC	
174	P MPLS Edge Routers		Juniper/J6350/CISCO	FC	
175	Deep Packet Inspection Firewall		Juniper/SRX3400/CISCO	FC	
176	PC with Intel Core i5 Processor		Imported	FC	
177	IP based KVM solution for 8 servers		Imported	FC	

7.1.3 ICT Infrastructure at District Property Record Centres/Customer Facilitation Centres

S. No.	Description	Quantity/ Licenses	Proposed Solution (Vendor/ Product/Model)	Compliance (FC/PC/NC)	Remarks
178	Edge Router, Firewall, 16 Port 10/100/1000 Ethernet Switch and VPN appliance		Juniper/SRX240H/CISCO	FC	

179	Rack Mount Servers with Intel® Xeon® 4 core, 1.60 GHz Processor		Dell-R420/DL360E GEN8	FC	

7.1.4 Training Services

S. No.	Description	Quantity/ Licenses	Proposed Solution (Vendor/ Product/Model)	Compliance (FC/PC/NC)	Remarks
180	On-Site On Job Training		Local	FC	
181	Formal Classroom Training	12 persons	Foreign	FC	

7.1.5 SLA and Operations Support

S. No.	Description	Quantity/ Licenses	Proposed Solution (Vendor/ Product/Model)	Compliance (FC/PC/NC)	Remarks
182	Providing SLA and Operations Support		Multi vendors	FC	

7.1.6 Professional Services

S. No.	Description	Quantity/ Licenses	Proposed Solution (Vendor/ Product/Model)	Compliance (FC/PC/NC)	Remarks
183	Development of SOPs for operations and routine maintenance of the entire Data Centre facility		Multi vendors	FC	
184	Development of Detailed Network Configuration Plan		Multi vendors	FC	

7.1.7 Connectivity

S. No.	Description	Quantity/ Licenses	Proposed Solution (Vendor/ Product/Model)	Compliance (FC/PC/NC)	Remarks

185	2 Mbps Data Connectivity over terrestrial link between the Data Centre at Karachi and DR facility at Hyderabad		PTCL	FC	
186	512 kbps Data Connectivity over terrestrial link between the Data Centre at Karachi, DR facility at Hyderabad and the District Facilitation Centres at each of the 27 Districts in Sindh		PTCL	FC	

7.2.4 SLA and Operations Support

3rd party Audit Parameters:

Note: 3rd party audit will be carried out on all infrastructure design, floor plan & infrastructure items (mentioned in BOQ where applicable) under this contract.

Appendix – F Reporting Requirements

Sr. No.	Description	No. of days
1	Inception Reports	Within 30 days after commencement of services
2	Monthly Progress Report	5th of every month
3	Mid Term Report	Half of the project life
4	Final Report	At the end of project
5	Project review Meetings	Weekly

Note: Contractor have to deliver any other report as and when required by the Client.

SUMMARY OF BILL OF QUANTITIES (BOQs)

S.No	Description	Quantity	Part No/Model No	Unit	Price/Unit		Unit Price (Rs.)	Price (Rs.)		Total Price (Rs.)
					Supplies	Services		Supplies	Services	
1		1640		ft^2	523	253	776	857,720	414,623	1,272,342
2		850		ft^2	545	263	808	463,250	223,935	687,185
3		760		ft^2	985	476	1,461	748,600	361,874	1,110,473
4		850		ft^2	495	239	734	420,752	203,390	624,141
5		8440		ft^2	190	92	282	1,603,583	775,197	2,378,780
6		280		ft^2	880	425	1,305	246,401	119,110	365,510
7		1		№	266,500	128,826	395,326	266,500	128,826	395,326
8		1		№	895,000	432,643	1,327,643	895,000	432,643	1,327,643
9		2		№	250,000	120,850	370,850	500,000	241,700	741,700
10		1		№	165,000	79,761	244,761	165,000	79,761	244,761
11		3		№	247,500	119,642	367,142	742,500	358,925	1,101,425
12		4		№	38,500	18,611	57,111	154,000	74,444	228,444
13		18		№	49,000	23,687	72,687	882,000	426,359	1,308,359
14		4		№	38,500	18,611	57,111	154,000	74,444	228,444

15		3		№	99,000	47,857	146,857	297,000	143,570	440,570
16		1		№	957,000	462,614	1,419,614	957,000	462,614	1,419,614
17		14		№	129,495	62,598	192,093	1,812,930	876,370	2,689,300
18		1		Solution	3,308,679	1,599,415	4,908,094	3,308,679	1,599,415	4,908,094
19		28		№	74,560	36,042	110,602	2,087,681	1,009,184	3,096,865
20		2		№	63,800	30,841	94,641	127,600	61,682	189,282
21		6		Rolls	319,000	154,205	473,205	1,914,000	925,228	2,839,228
22		4		№	46,090	22,280	68,370	184,360	89,120	273,480
24		100		№	372	180	552	37,200	17,982	55,182
25		2		№	71,340	34,486	105,826	142,680	68,972	211,652
26		150		ft	122	59	181	18,300	8,846	27,146
27		30		№	3,311	1,601	4,912	99,330	48,016	147,346
28		30		№	3,091	1,494	4,585	92,730	44,826	137,556
29		1700		ft	1,128	545	1,673	1,917,596	926,972	2,844,568
30		1		Solution	129,495	62,598	192,093	129,495	62,598	192,093
52		3		№	5,166,215	2,497,348	7,663,563	15,498,645	7,492,045	22,990,690

53		2		№	1,341,537	648,499	1,990,036	2,683,074	1,296,998	3,980,072
54		9		№	328,800	158,942	487,742	2,959,200	1,430,477	4,389,677
55		2		№	66,000	31,904	97,904	132,000	63,809	195,809
56		2		№	13,750	6,647	20,397	27,500	13,294	40,794
57		200		m	6,472	3,129	9,601	1,294,401	625,713	1,920,113
58		60		m	2,321	1,122	3,443	139,260	67,318	206,578
59		100		m	177	86	263	17,700	8,556	26,256
60		100		m	722	349	1,071	72,200	34,901	107,101
61		100		m	309	149	458	30,900	14,937	45,837
62		2		Sets	5,467,960	2,643,212	8,111,172	10,935,920	5,286,424	16,222,344
63		2		№	2,990,319	1,445,520	4,435,839	5,980,638	2,891,040	8,871,678
64		2		№	3,309,375	1,599,752	4,909,127	6,618,750	3,199,504	9,818,254
65		1		Solution	605,000	292,457	897,457	605,000	292,457	897,457
66		6		Jobs	300,000	145,020	445,020	1,800,000	870,120	2,670,120
67		1		Job	869,000	420,075	1,289,075	869,000	420,075	1,289,075
68		1		Solution	366,000	176,924	542,924	366,000	176,924	542,924

69		4		№	11,000	5,317	16,317	44,000	21,270	65,270
70		1		№	4,027,800	1,947,039	5,974,839	4,027,800	1,947,039	5,974,839
71		1		№	804,450	388,871	1,193,321	804,450	388,871	1,193,321
72		2		№	748,440	361,796	1,110,236	1,496,880	723,592	2,220,472
73		1		Solution	521,600	252,141	773,741	521,600	252,141	773,741
74		20		№	12,650	6,115	18,765	253,000	122,300	375,300
75		2		№	44,000	21,270	65,270	88,000	42,539	130,539
76		48		№	7,150	3,456	10,606	343,200	165,903	509,103
77		100		m	1,650	798	2,448	165,000	79,761	244,761
78		100		m	1,540	744	2,284	154,000	74,444	228,444
79		1		№	89,100	43,071	132,171	89,100	43,071	132,171
80		1		Solution	15,000,000	7,251,000	22,251,000	15,000,000	7,251,000	22,251,000
81		1		Solution	8,957,404	4,330,009	13,287,413	8,957,404	4,330,009	13,287,413
82		2		№	296,600	143,376	439,976	593,200	286,753	879,953
83		150		№	2,554	1,235	3,789	383,101	185,191	568,291
84		1		Solution	2,408,153	1,164,101	3,572,254	2,408,153	1,164,101	3,572,254

85		1		Solution	16,972,400	8,204,458	25,176,858	16,972,400	8,204,458	25,176,858
86		1		Solution	10,000,000	4,834,000	14,834,000	10,000,000	4,834,000	14,834,000
87		1		Solution	8,328,000	4,025,755	12,353,755	8,328,000	4,025,755	12,353,755
88		2		№	3,350,100	1,619,438	4,969,538	6,700,200	3,238,877	9,939,077
89		2		№	585,000	282,789	867,789	1,170,000	565,578	1,735,578
90		2		№	540,300	261,181	801,481	1,080,600	522,362	1,602,962
91		2		№	6,879,600	3,325,599	10,205,199	13,759,200	6,651,197	20,410,397
92		5		№	145,500	70,335	215,835	727,500	351,674	1,079,174
93		1		Solution	38,606,600	18,662,430	57,269,030	38,606,600	18,662,430	57,269,030
94		1		Solution	8,038,200	3,885,666	11,923,866	8,038,200	3,885,666	11,923,866
95		1		№	267,300	129,213	396,513	267,300	129,213	396,513
96		1		№	50,000	24,170	74,170	50,000	24,170	74,170
97		30		№	18,150	8,774	26,924	544,500	263,211	807,711
98		1		№	35,000	16,919	51,919	35,000	16,919	51,919
				SUB TOTAL				**212,864,460**	**102,898,707**	**315,763,167**

HYDERABAD

S.No.		Quantity	Part No/Model No	Unit	Price/Unit		Unit Price-(Rs.)	Price (Rs.)		Total Price (Rs.)
					Supplies	Services		Supplies	Services	
99		800		ft^2	523	253	776	418,400	202,256	620,655
100		4760		ft^2	190	92	282	904,391	437,197	1,341,587
101		450		ft^2	545	263	808	245,251	118,553	363,804
102		450		ft^2	495	239	734	222,751	107,677	330,427
103		18		№	18,150	8,774	26,924	326,700	157,927	484,627
104		1		№	266,500	128,826	395,326	266,500	128,826	395,326
105		1		№	230,500	111,424	341,924	230,500	111,424	341,924
106		1		№	170,500	82,420	252,920	170,500	82,420	252,920
107		1		№	253,000	122,300	375,300	253,000	122,300	375,300
108		2		№	44,000	21,270	65,270	88,000	42,539	130,539
109		4		№	51,200	24,750	75,950	204,800	99,000	303,800
110		4		№	40,700	19,674	60,374	162,800	78,698	241,498
111		2		№	104,500	50,515	155,015	209,000	101,031	310,031
112		1		№						1,134,059

					764,500	369,559	1,134,059	764,500	369,559		
113		7		№	129,495	62,598	192,093	906,465	438,185		1,344,650
114		1		Solution	3,308,679	1,599,415	4,908,094	3,308,679	1,599,415		4,908,094
115		12		№	74,560	36,042	110,602	894,720	432,508		1,327,228
116		2		№	63,800	30,841	94,641	127,600	61,682		189,282
117		6		Rolls	71,500	34,563	106,063	429,000	207,379		636,379
118		4		№	46,090	22,280	68,370	184,360	89,120		273,480
119		48		№	778	376	1,154	37,344	18,052		55,396
120		100		№	372	180	552	37,200	17,982		55,182
121		2		№	71,340	34,486	105,826	142,680	68,972		211,652
122		150		ft	122	59	181	18,300	8,846		27,146
123		60		№	3,311	1,601	4,912	198,660	96,032		294,692
124		60		№	3,091	1,494	4,585	185,460	89,651		275,111
125		1200		ft	1,128	545	1,673	1,353,597	654,333		2,007,930
126		1		Solution	129,495	62,598	192,093	129,495	62,598		192,093
143		2		№	5,166,215	2,497,348	7,663,563	10,332,430	4,994,697		15,327,127
144		4		№							1,950,968

					328,800	158,942	487,742	1,315,200	635,768		
145		1		№	66,000	31,904	97,904	66,000	31,904		97,904
146		1		№	13,750	6,647	20,397	13,750	6,647		20,397
147		180		m	5,195	2,511	7,706	935,100	452,027		1,387,127
148		60		m	2,321	1,122	3,443	139,260	67,318		206,578
149		120		m	177	86	263	21,240	10,267		31,507
150		100		m	722	349	1,071	72,200	34,901		107,101
151		200		m	309	149	458	61,800	29,874		91,674
152		1		Sets (each N+1 30kW solution is one set)	4,726,215	2,284,652	7,010,867	4,726,215	2,284,652		7,010,867
153		1		№	2,432,218	1,175,734	3,607,952	2,432,218	1,175,734		3,607,952
154		1		№	2,378,200	1,149,622	3,527,822	2,378,200	1,149,622		3,527,822
155		1		Solution	375,100	181,323	556,423	375,100	181,323		556,423
156		6		Jobs	300,000	145,020	445,020	1,800,000	870,120		2,670,120
157		1		Solution	213,500	103,206	316,706	213,500	103,206		316,706

158		1		№	2,418,600	1,169,151	3,587,751	2,418,600	1,169,151	3,587,751
159		1		№	636,700	307,781	944,481	636,700	307,781	944,481
160		2		№	424,300	205,107	629,407	848,600	410,213	1,258,813
161		1		Solution	2,667,500	1,289,470	3,956,970	2,667,500	1,289,470	3,956,970
162		16		№	12,650	6,115	18,765	202,400	97,840	300,240
163		2		№	38,500	18,611	57,111	77,000	37,222	114,222
164		24		№	4,950	2,393	7,343	118,800	57,428	176,228
165		100		m	880	425	1,305	88,000	42,539	130,539
166		100		m	770	372	1,142	77,000	37,222	114,222
167		1		№	83,600	40,412	124,012	83,600	40,412	124,012
168		1		Solution	400,000	193,360	593,360	400,000	193,360	593,360
169		1		Solution	6,268,100	3,030,000	9,298,100	6,268,100	3,030,000	9,298,100
170		2		№	296,600	143,376	439,976	593,200	286,753	879,953
171		1		Solution	16,972,400	8,204,458	25,176,858	16,972,400	8,204,458	25,176,858
172		1		№	4,000,000	1,933,600	5,933,600	4,000,000	1,933,600	5,933,600
173		1		№	930,129	449,624	1,379,753	930,129	449,624	1,379,753

174		1		№	585,000	282,789	867,789	585,000	282,789	867,789
175		1		№	6,494,300	3,139,345	9,633,645	6,494,300	3,139,345	9,633,645
176		2		№	145,500	70,335	215,835	291,000	140,669	431,669
177		1		Solution	30,800	14,889	45,689	30,800	14,889	45,689
					SUB TOTAL			81,085,995	39,196,985	120,282,980

S.No.		Quantity	Part No/Model No	Unit	Price/Unit		Unit Price (Rs.)	Price (Rs.)		
					Supplies	Services		Supplies	Services	Total Price (Rs.)
178		30		№	442,150	213,735	655,885	13,264,500	6,412,059	19,676,559
179		54		№	318,561	153,992	472,553	17,202,294	8,315,589	25,517,883
					SUB TOTAL			30,466,794	14,727,648	45,194,442

S.No.		Quantity	Part No/Model No	Unit	Price/Unit		Unit Price (Rs.)	Price (Rs.)		
					Supplies	Services		Supplies	Services	Total Price (Rs.)
180		1		Package						
181		1		Package	-	12,460,560	12,460,560	-	12,460,560	12,460,560
					SUB TOTAL			-	12,460,560	12,460,560

S.No.		Quantity	Part No/Model No	Unit	Price/Unit		Unit Price (Rs.)	Price (Rs.)		
					Supplies	Services		Supplies	Services	Total Price (Rs.)

182		1		Year		72,194,398	72,194,398	-	72,194,398	72,194,398
							SUB TOTAL	-	72,194,398	72,194,398

S.No.		Quantity	Part No/Model No	Unit	Price/Unit		Unit Price-(Rs.)	Price (Rs.)		Total Price (Rs.)
					Supplies	Services		Supplies	Services	
183		1		Job		14,438,880	14,438,880	-	14,438,880	14,438,880
184		1		Job						-
							SUB TOTAL	-	14,438,880	14,438,880

S.No.		Quantity	Part No/Model No	Unit	Price/Unit		Unit Price-(Rs.)	Price (Rs.)		Total Price (Rs.)
					Supplies	Services		Supplies	Services	
185		1		Job		2,373,440	2,373,440	-	2,373,440	2,373,440
186		1		Job		13,617,612	13,617,612	-	13,617,612	13,617,612
							SUB TOTAL	-	15,991,052	15,991,052

Grand Total	324,417,248	271,908,230	596,325,478

No. 01-15-10-PMU-BOR/2012/

BOARD OF REVENUE SINDH
PROJECT MANAGEMENT UNIT

Karachi Dated: 24 -12-2012

To,

The Director C.B,
Sindh Public Procurement Authority,
Karachi

SUBJECT: **BID EVALUATION REPORT ON BIDDING PROCESS FOR "ESTABLISHMENT OF DATA CENTER, DISASTER RECOVERY CENTER AND 27 FACILITATION CENTERS FOR LARMIS**

Bidding process for procurement of subject tender has been finalized by the Procurement Committee which in its meeting held on 21-12-2012 under the Chairmanship of Member R&S, Board of Revenue, Sindh has finalized the evaluation of bid of M/s. Zehra Communications for the subject assignment under the Scheme **"Land Administration & Revenue Management Information System in Sindh"**

The Bid Evaluation Report is accordingly prepared in the standard format and is hereby forwarded under Rule 45 of the Sindh Public Procurement Rules 2010 for hoisting on website of the Authority.

Deputy Director (F&A)
LARMIS, PMU

C.C. To:-

- The Member R&S, Board of Revenue, Sindh
- The Project Director PMU, Board of Revenue, Sindh
- The PS to Senior Member, Board of Revenue, Sindh
- Office Record

Deputy Director (F&A)
LARMIS, PMU

SPPRA INWARD DIARY 4970 24.12

Bid Evaluation Report

1. **Name of Procuring Agency:** Project Management Unit, Reforms Wing & Special Cell, Board of Revenue, Sindh
2. **Tender Reference No:** INF-KRY-1709/12
3. **Tender Description/Name of work/Item:** Establishment of Data Center, Disaster Recovery Center and ICT Infrastructure of 27 Facilitation Centers in Sindh under the scheme of LARMIS
4. **Method of Procurement:** Quality and Cost Based System Method (QCBS)
5. **Tender Published:** Daily Dawn dated 29 September, 2012
6. **Total Bid documents Sold;** 20 (Twenty)
7. **Total Bids Received:** 03 (Three)
8. **Technical Bid Opening date:** 07-12-2012
9. **No. of Bids technically qualified:** 02 (Two)
10. **Bid(s) Rejected:** 01 (One)
11. **Financial Bid Opening date:** 21-12-2012
12. **Bid Evaluation Report:**

S No	*Name of Firm or Bidder*	*Cost offered by the Bidder*	*Ranking in terms of cost*	*Comparison with Estimated cost*	*Reasons for acceptance/ rejection*	*Remarks*
0	1	2	3	4	5	6
1.	M/s Zehra Communications	**Rs. 596,325,478** (Five Hundred and Ninety Six Million, Three Hundred and Twenty Five Thousand, Four Hundred Seventy Eight Only)	1st	Higher	In the light of consolidated score, the Procurement Committee found the bidder as the first best evaluated lowest bid and recommended for award of contract.	Procurement Committee recommended the bidder for final award of contract in its meeting dated: 21-12-2012.
2.	M/s. Jaffer Brothers	**Rs. 646,383,283** (Six Hundred and Forty Six million, Three Hundred and Eighty Three thousand, Two Hundred and Eighty Three Only)	2nd	Higher	The firm was technically qualified but its bid was found higher. Moreover, the bid security was also not attached with financial proposal.	The Committee rejected the financial bid of the firm due to lack of bid security

(Athar Hussain Baloch)
Member
Representative of IT Deptt

(Mumtaz Hussain Gopang)
Member
Representative of Finance Deptt:

(Rahim Bux Bugti)
Member
Deputy Director (F&A),
LARMIS PMU

(Zulfiqar Ali Nizamani)
Member/Project Director-PMU
Board of Revenue Sindh

(Zulfiqar Ali Shah)
Chairman/Member (R&S)
Board of Revenue Sindh