

Punjab Masstransit Authority			
Minutes of Meeting			
Subject:	Pre-Bid Conference On Tender For Provision, Commissioning, Installation, Calibration, Integration, Testing, and Execution of IT Systems (CCTV Surveillance, Connectivity And Video Wall) For Metrobus System in Multan.		
Date:	March 01, 2015	Time:	10:30 am
Venue:	Committee Room, Punjab Masstransit Authority	Chair:	Mr. Muhammad Ozair Shah, General Manager Operations, PMA
Participants:	List of Participants: <ol style="list-style-type: none"> 1. General Manager Operations, PMA 2. Manager IT, PMA 3. IT Expert, PMA 4. Financial Specialist, PMA The list of prospective bidders who participated the Pre-Bid meeting is attached at Annex-A.		
Question		Discussion/Decision	
1. Clarification regarding 99.9% uptime requirement mentioned in Clause 13, “Functional Requirements”.		1. After due deliberations with prospective Bidders the Clause 13, “Functional Requirements” is amended as below “All the systems/ equipment’s shall provide high availability with 99.9% 99.5% uptime 24h/7d, 365 days....”	
2. Clarification regarding Clause 41.4 (A) of “Payment”		2. After due deliberations with prospective Bidders it is decided that the bidder may issue the first invoice after the start of the Metrobus operation in Multan provided that non fulfillment of any of the delivery conditions solely due to reason(s) attributable to unavailability of station(s)/site. The clause 41.4 (A) is amended as: <p style="text-align: center;"><i>“Date of commencement of Metrobus Operation in Multan <u>provided that non-fulfillment of any of the delivery conditions mentioned in clause 41.3 above.</u></i>”</p>	

<p>3. Clarification regarding clause 41.5 of “Payment”</p>	<p><u>solely due to reason(s) attributable to unavailability of station(s)/site shall be deemed to have been fulfilled”.</u> or</p> <p>3. After due deliberations with prospective Bidders the clause 41.5 (A) of Payment is amended as: “Invoices issued for the period preceding the commencement of Metrobus Operation in Multan shall include, 70% of total price inclusive of Sales Tax on Services, mentioned in the Price Table. The amount so paid shall be adjusted equally in the invoices issued for the first ten (10) months after commencement of the Metrobus Operations. The duration of contract period will be extended till the number of months the 70% payment is made. However, for these ‘ten’ months no change shall be effected in determination of upper cap of penalties i.e 10% of the actual Monthly Service Charge (as per quoted bid value) <u>Invoices issued for the period subject to Clause 41.4 in Multan shall include, 70% of total price inclusive of Sales Tax on Services, mentioned in the Price Table. The monthly payments for the remaining number of months up till the duration of the Contract shall be made based on the formula as given below:</u></p> $M = [Z \times 72 - (m \times 0.7 \times Z) - (m \times om)] / (72 - m)$ <p><u>Where</u></p> <p><u>M = monthly payment after ‘m’ number of months</u></p> <p><u>Z = Bid price</u></p> <p><u>m = Number of months of payments made at 70% of Z</u></p> <p><u>om = monthly O&M price component for C&C</u></p>
<p>4. Clarification regarding Part Controller(s) of Video Wall with Controller.</p>	<p>4. After due deliberations with prospective bidders it is clarified that the hardware is required for conversion to analog streams or other data sources and the typo error is amended in Video Wall with Controller specifications as below on page 102.</p> <p><i>Should feature built-in integration of digital</i></p>

<p>5. Clarification regarding Part “Installed Processors” and “10Gig NIC” of Server Form (Mid Range Blade Servers).</p>	<p><i>network video streams /IP Camera Streams and OR required hardware for conversion to analog streams or other data sources.</i></p> <p>5. After due deliberations with prospective bidders it is decided that following amendments to specifications of Server Form (Mid Range Blade Servers) are made: Installed Processors: 2 x Intel XeonE5 4650V2 (2.40GHz/10core) or higher 2 x Intel XeonE5-2600V3 (2.3 GHz/10 core) or higher Max Processor Supported: 4 Processors 10Gig NICs: 2-Port (10 Gigabit Network Adapter/FC)</p>
<p>6. Clarification regarding Part “Raw Storage” of SAN Storage 500 TB.</p>	<p>6. After due deliberations with prospective bidders it is decided that any other combination of (125x4TB) is acceptable. Following amendments to specifications of SAN Storages 500 TB are made in the relevant section at page number 110 as below. RAW Storage : 5 x 400GB SSD Drives (Used as SSD Caching to Improve overall system Performance) (125 x 4TB) or any other combination 3.5 Inch 7.2k NL-SAS Disk Drives</p>
<p>7. Clarification regarding Part “Raw Storage” and “Front end ports” of DAS Storage 100 TB</p>	<p>7. After due deliberations with prospective bidders it is decided that any other combination of (25x4TB) is acceptable. It is also decided that for front end ports, FC ports are also acceptable besides iSCSI ports. Following amendments to specifications of DAS Storages 100 TB are made in the relevant section at page number 109 as below: RAW Storage: 5 x 400GB SSD Drives (Used as SSD Caching to Improve overall system Performance) (25 x 4TB) or any other combination 3.5 Inch 7.2k NL-SAS Disk Drives Front End Ports: 4 x 10Gbps iSCSI/FC Ports for SAN (Required)</p>
<p>8. Clarification regarding field operations requirements “IP Phone non-executive</p>	<p>8. It is clarified that there is no field operation requirements from “IP Phone non-executive Hard Phone”. The relevant</p>

<p>Hard Phone ”</p>	<p>section on page 114 is amended as “Hard IP Phone for field operations with mono screen display alongwith standard features to connect through LAN to call manager etc.”</p>
<p>9. Clarification regarding “Data Center Core Switches (Data Center) ”</p>	<p>9. After due deliberations with prospective bidders following amendments to specifications of “Data Center Core Switches (Data Center) are made:</p>
<p>10. Clarification regarding “Data Center Firewall (Data Center) ”</p>	<p>Chassis: Eight slot Modular chassis Modular chassis</p> <p>High Availability: 1+1 Routing Engine Redundancy Redundant Switch Fabric Redundant Power Supplies</p> <p>Backplane Speed: 6.2 Tbps or higher 1 Tbps or higher</p>
<p>11. M/s Inbox sought the clarification regarding Location of Data Cabinet and cameras</p>	<p>10. After due deliberations with prospective bidders following amendments to specifications of “Data Center Firewall (Data Center) are made such that following requirements are removed:</p> <p>Available Slots: 6 Slots: (Requirement of 06 available slots is removed)</p> <p>Application Identification</p> <p>Application Denial of Service Protection (AppDoS)</p> <p>AppTrack</p> <p>AppQoS</p> <p>AppFW</p>
<p>11. M/s Inbox sought the clarification regarding Location of Data Cabinet and cameras</p>	<p>11. Self-explanatory station drawings are attached Annex-B depicting the location of Data Cabinet and Cameras.</p>
<p>12. M/s Inbox sought clarification about ducting responsibility in station to install the cameras.</p>	<p>12. It is clarified that conduits from the data cabin at station for various fixtures, like camera, turnstile, passenger information systems etc. are well covered in civil contract, incorporated in the design and construction drawings and are laid in the civil work of the platform. However selected bidder of the project will do all the cabling, wiring etc.</p>

ATTENDANCE SHEET

PRE-BID MEETING ON PROVISION, COMMISSIONING, INSTALLATION, CALIBRATION, INTEGRATION, TESTING AND EXECUTION OF IT-SYSTEMS (CCTV SURVEILLANCE, CONNECTIVITY AND VIDEO-WALL) FOR MULTAN METROBUS SYSTEM

ATTENDANCE SHEET

Place: Committee Room, PMA Office, 5th floor,
Arfa Software Technology Park, Lhr

Date: 01/03/2016

Time 10:30 AM

Sr. No.	Name of Organization	Name of JV Partner (If any)	Representative's Name & Designation	Contact No.	Email Address	Signature
1	DWP Tech.		R. B. Qureshi	03004011288	Raza.Bahadur@dwp.com.pk	
2	INBOX		ALI SHAHBAZ	03334466791	ali.shahbaz@inboxbiz.com	
3	Arcana Info. Pvt		Mian Atif Riaz	0302-5556423	atif.riaz@arcainf.com	
4	ORACLE		ADNAN AKBAR DATA INTEGRATION SALES (PAK-AFGH)	03018556676	adnan.akbar@oracle.com	
5	Interactive Group		Sami Farooq	03450552102	Sami.farooq@iacgrp.com	
6	Manshe Brothers		KAMRAN SADEEN	0321-4644203	kamran@manshebrothers.com	
7	Digital Links		Bilal Nazeer	0321-4022161	bilal.nazeer@digitallinks.biz	
8	Interactive Group		Asif Tareen	0333-3848154	asif.tareen@iacgrp.com	
9	Interactive Group		Sagib Saleem	03335141092	sagib.saleem@iacgrp.com	
10	INTERACTIVE GROUP		ARSLAN NAUWAZ	0333-7548773	arslan.nauwaz@iacgrp.com	
11	Digital Links		Waqas Malik	0322-8400122	waqas.malik@digitallinks.biz	
12	Manshe Brothers		Rizwan Ahsan	03214040528	rizwan@manshebrothers.com	
13	Manshe Brothers		M. Tariq	0321-4644203	muhammaltariq@manshebrothers.com	
14	INBOX		Faisal	0321-4021089	faisal.iftikhar@inboxbiz.com	
15	SI Global Solutions		Ali Bukhari	03074277927	ali.bukhari@sgbl.com	

ATTENDANCE SHEET

PRE-BID MEETING ON PROVISION, COMMISSIONING, INSTALLATION, CALIBRATION, INTEGRATION, TESTING AND EXECUTION OF IT-SYSTEMS (CCTV SURVEILLANCE, CONNECTIVITY AND VIDEO-WALL) FOR MULTAN METROBUS SYSTEM

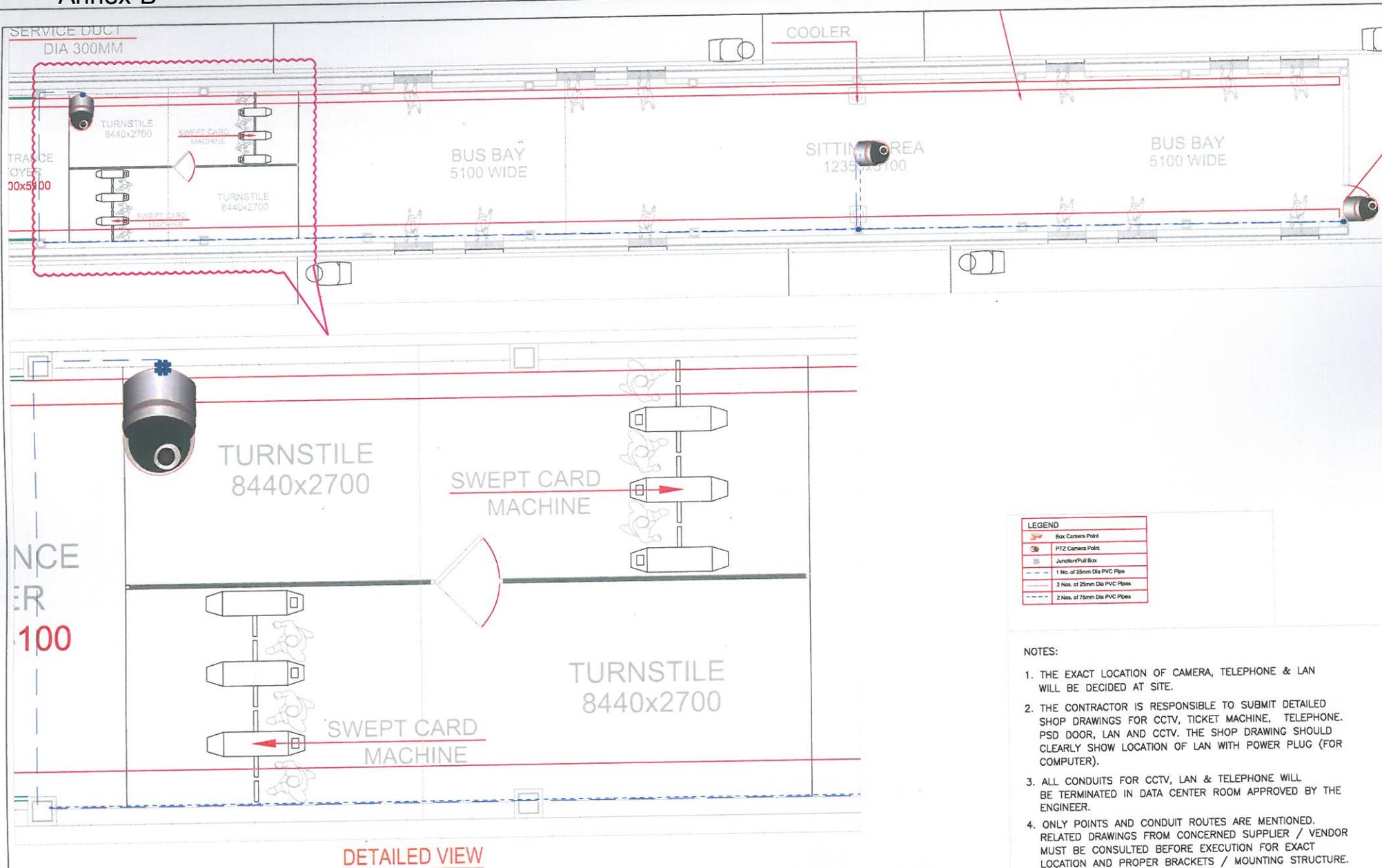
ATTENDANCE SHEET

Place: Committee Room, PMA Office, 5th floor,
Arfa Software Technology Park, Lhr

Date: 01/03/2016

Time 10:30 AM

Sr. No.	Name of Organization	Name of JV Partner (If any)	Representative's Name & Designation	Contact No.	Email Address	Signature
16	DWP TECHNOLOGIES		ROHAIL BASHIR	0300-8466659	rohail.bashir@dwp.com.pk	
17	ARCANA		Asad R. Chishty	0301-8431316	asad.chishty@arcanainfo.com	
18	ARCANA INFO		AUN SYED -	0300-8591880	aun.syed@arcanainfo.com	
19	"		ARSHAD ABBAS	0333-484857	arshad.abbas@arcanainfo.com	
20	RAAZIO int.		M. Amir Ikram	0300-4563366	aamir.ikram@raazio.com.pk	
21	Raaziq Int'l		Abdur Rehman COO	0333-4000577	abdur.rehman@raaziq.com.pk	
22	Raziq Raaziq					
23	Syul Hassan Raza					
24						
25	Premier Systems		Raziq Mirza	030084736748	raziq.mirza@Premier.com.pk	
26	" "		Syul Hassan Raza	0300-5556666	syul.hassan@Premier.com.pk	
27	Cell More / MICRO		M. Afzal Talib	0321-476555	afzal@micro.com.pk	
28						
29						
30						



LEGEND	
	Box Camera Point
	PTZ Camera Point
	Junction/Full Box
	1 No. of 25mm Dia PVC Pipe
	2 Nos. of 25mm Dia PVC Pipes
	2 Nos. of 75mm Dia PVC Pipes

- NOTES:
1. THE EXACT LOCATION OF CAMERA, TELEPHONE & LAN WILL BE DECIDED AT SITE.
 2. THE CONTRACTOR IS RESPONSIBLE TO SUBMIT DETAILED SHOP DRAWINGS FOR CCTV, TICKET MACHINE, TELEPHONE, PSD DOOR, LAN AND CCTV. THE SHOP DRAWING SHOULD CLEARLY SHOW LOCATION OF LAN WITH POWER PLUG (FOR COMPUTER).
 3. ALL CONDUITS FOR CCTV, LAN & TELEPHONE WILL BE TERMINATED IN DATA CENTER ROOM APPROVED BY THE ENGINEER.
 4. ONLY POINTS AND CONDUIT ROUTES ARE MENTIONED. RELATED DRAWINGS FROM CONCERNED SUPPLIER / VENDOR MUST BE CONSULTED BEFORE EXECUTION FOR EXACT LOCATION AND PROPER BRACKETS / MOUNTING STRUCTURE.

CLIENT:

The Punjab Metrobus Authority
Government of Punjab

PROJECT CONSULTANT:

OSMANI AAK
Osmani & Company (Pvt.) Ltd.
Consulting Engineers, Architects, Planners
in association with: ADK, Consulting Engineers, S.A.

PROJECT:

TRANSPORT MODELING AND FEASIBILITY STUDY FOR MASS TRANSIT SYSTEM IN MULTAN, PAKISTAN

DRAWING TITLE:

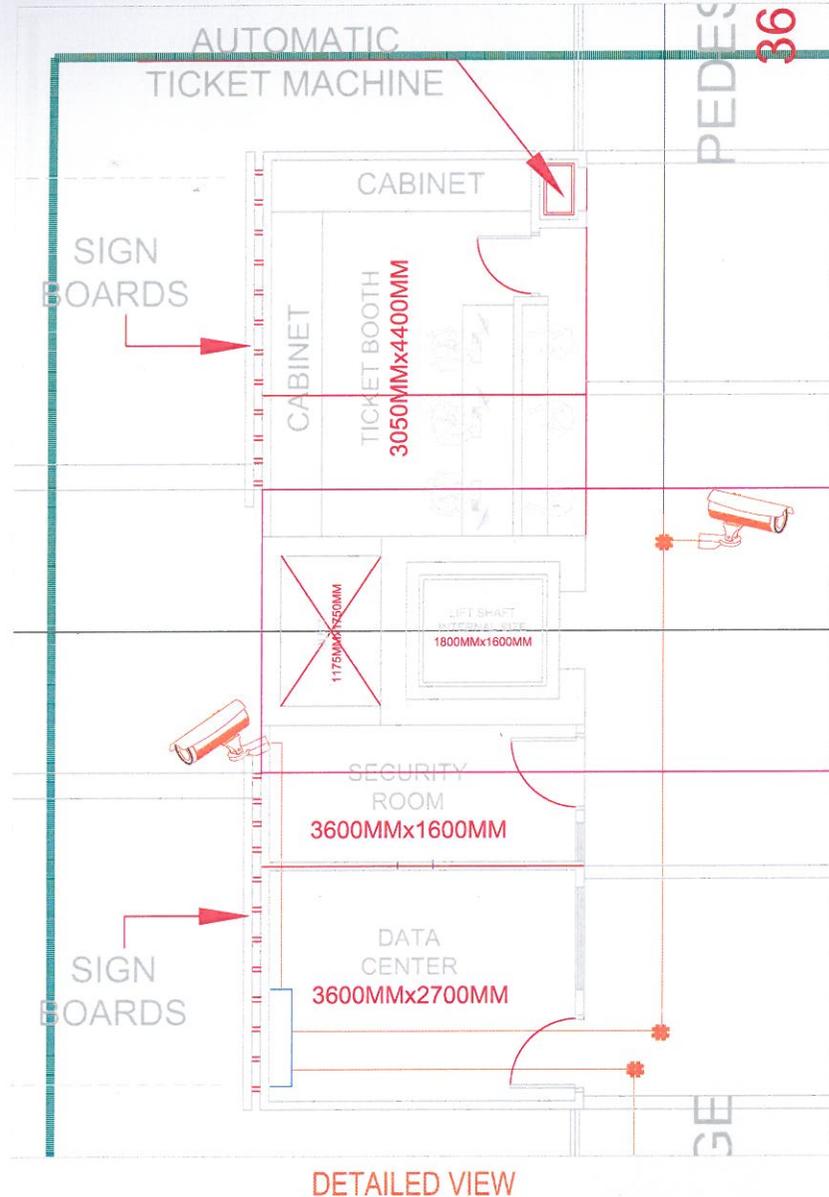
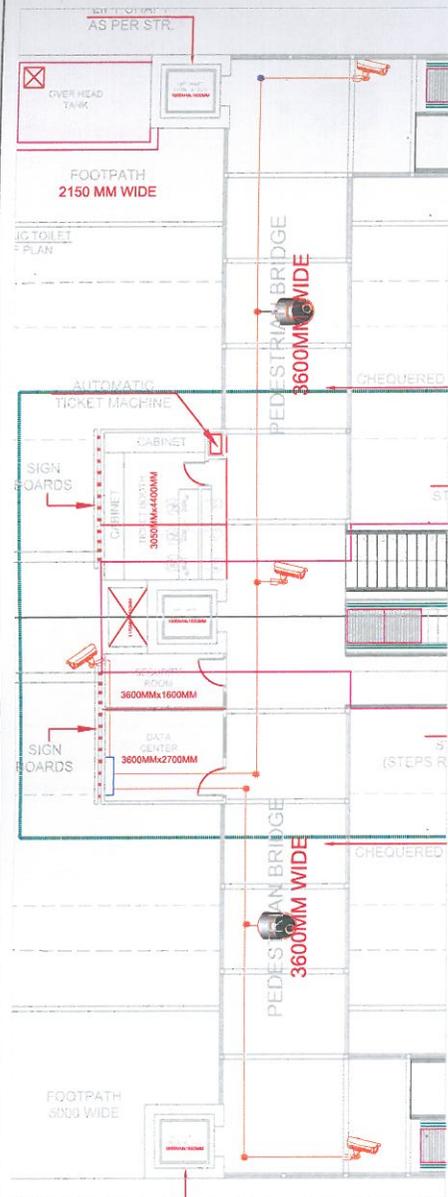
ELEVATED STATION ICT TYPICAL DRAWING
CCTV (Power Conduit Layout)

DATED: APRIL 2015 DRAWING No: OCL-CL-A525-06

REV	DATE	DESCRIPTION	APPROVED	Rev No:

SCALE	Scale:

Sheet No. 6/8



DETAILED VIEW

LEGEND	
	Box Camera Point
	PTZ Camera Point
	Junction/Pull Box
	1 No. of 25mm Dia PVC Pipe
	2 Nos. of 25mm Dia PVC Pipes
	2 Nos. of 75mm Dia PVC Pipes

NOTES:

1. THE EXACT LOCATION OF CAMERA, TELEPHONE & LAN WILL BE DECIDED AT SITE.
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in association with: ADK, Consulting Engineers, S.A.

PROJECT:

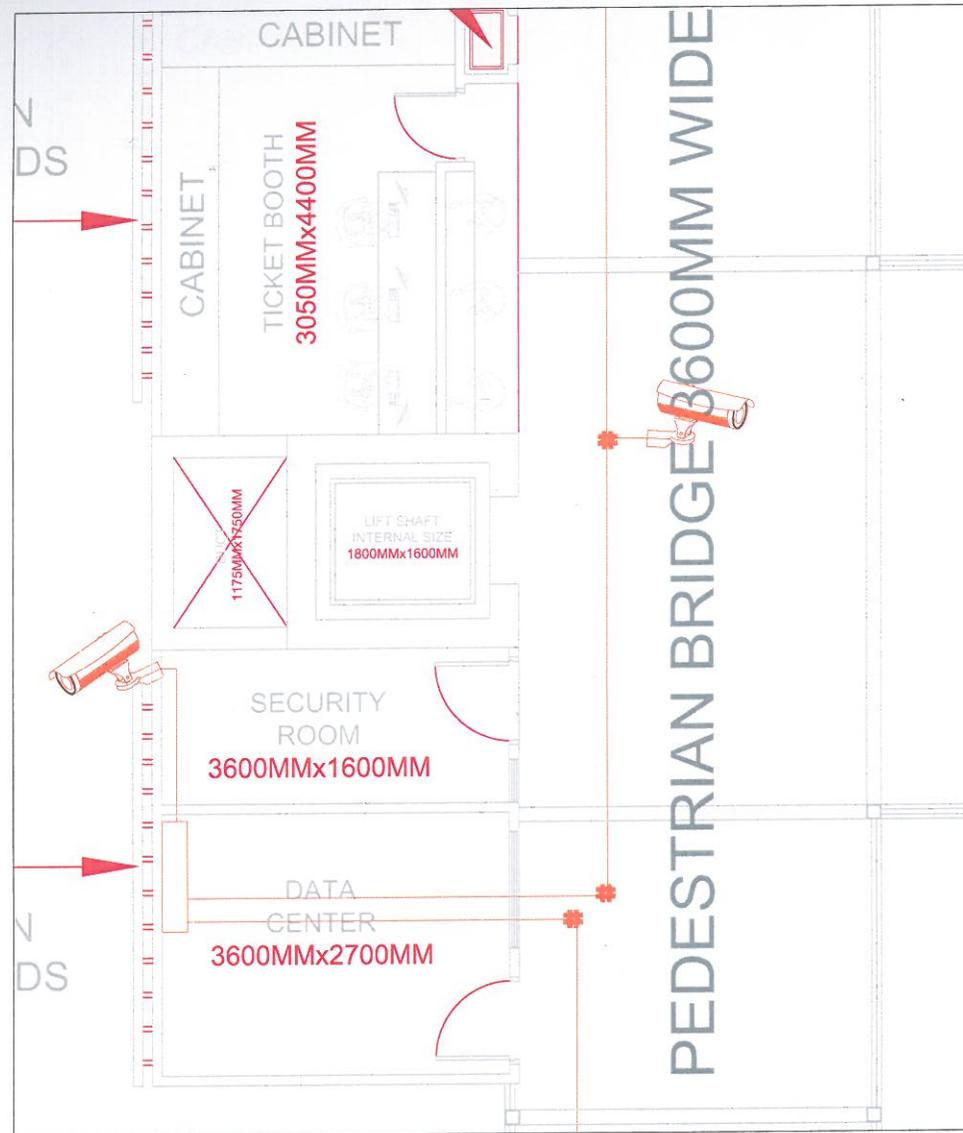
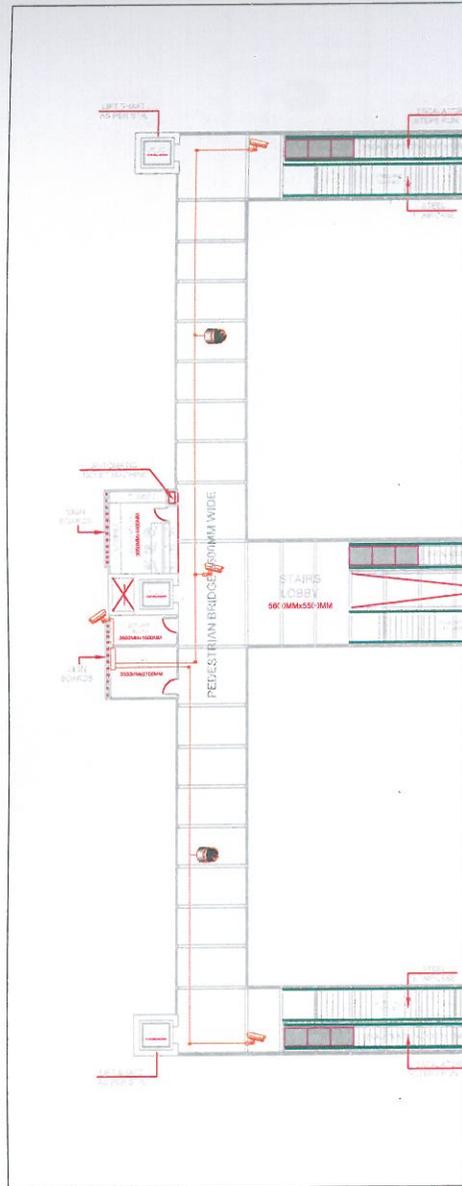
TRANSPORT MODELING AND FEASIBILITY STUDY FOR MASS TRANSIT SYSTEM IN MULTAN, PAKISTAN

DRAWING TITLE:

ELEVATED STATION ICT TYPICAL DRAWING
ICT (Data/Communication Cables Conduit Layout)

DATED: APRIL 2015 DRAWING No: OCL-CL-A525-07

REV	DATE	DESCRIPTION	APPROVED	Rev No:
			MOAZ RAZA	Scale:
			UMER SHAFIQ	
			FARHAN HAIDER	
				Sheet No. 7/8



DETAILED VIEW

LEGEND	
	Box Camera Point
	PTZ Camera Point
	Junction/Pull Box
	1 No. of 25mm Dia PVC Pipe
	2 Nos. of 25mm Dia PVC Pipes
	2 Nos. of 75mm Dia PVC Pipes

- NOTES:**
1. THE EXACT LOCATION OF CAMERA, TELEPHONE & LAN WILL BE DECIDED AT SITE.
 2. THE CONTRACTOR IS RESPONSIBLE TO SUBMIT DETAILED SHOP DRAWINGS FOR CCTV, TICKET MACHINE, TELEPHONE, PSD DOOR, LAN AND CCTV. THE SHOP DRAWING SHOULD CLEARLY SHOW LOCATION OF LAN WITH POWER PLUG (FOR COMPUTER).
 3. ALL CONDUITS FOR CCTV, LAN & TELEPHONE WILL BE TERMINATED IN DATA CENTER ROOM APPROVED BY THE ENGINEER.
 4. ONLY POINTS AND CONDUIT ROUTES ARE MENTIONED. RELATED DRAWINGS FROM CONCERNED SUPPLIER / VENDOR MUST BE CONSULTED BEFORE EXECUTION FOR EXACT LOCATION AND PROPER BRACKETS / MOUNTING STRUCTURE.

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PROJECT CONSULTANT:

OSMANI AAK
Engineering, Architecture, Planning, Microplanning, Surveying
Osmani & Company (Pvt.) Ltd.
Consulting Engineers, Architects, Planners
in association with: ADK, Consulting Engineers, S.A.

PROJECT:

TRANSPORT MODELING AND FEASIBILITY STUDY FOR MASS TRANSIT SYSTEM IN MULTAN, PAKISTAN

DRAWING TITLE:

AT GRADE STATION ICT TYPICAL DRAWING

ICT (Data/Communication Cables Conduit Layout)

DATED: APRIL 2015 DRAWING No: OCL-CL-A525-03

REV	DATE	DESCRIPTION	DRAWN	MOAZ RAZA	Scale:
			DESIGNED	UMER SHAFIQ	
			CHECKED	FARIAN HAIDER	
			SUBMITTED		Sheet No. 3/8
			APPROVED		Rev No:

Addendum No1 to Tender Document

**PROVISION, COMMISSIONING, INSTALLATION, CALIBRATION,
INTEGRATION, TESTING, AND EXECUTION OF IT SYSTEMS (CCTV
SURVEILLANCE, CONNECTIVITY AND VIDEO WALL) FOR MULTAN
METROBUS SYSTEM**



THE PUNJAB MASSTRANSIT AUTHORITY GOVERNMENT OF THE PUNJAB

5th Floor, Arfa Software Technology Park (ASTP)

346-B, Main Ferozpur Road, Lahore, Pakistan.

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Addendum No.1 to the Tender Document

Due to some clarifications required in the RFP document, the following addendum is hereby issued; which shall form a part and parcel of the original document titled

"Provision, Commissioning, Installation, Calibration, Integration, Testing and Execution of It-Systems (CCTV Surveillance, Connectivity And Video-Wall) For Multan Metrobus System"

, issued and uploaded on February 23, 2016. The contents of this addendum shall supersede/replace pages 27, 44, 45, 102, 106, 108, 110, 114, 116 and 118 of the original RFP document, and shall be read as part of the RFP document uploaded on the following websites:

www.pma.punjab.gov.pk

www.ppra.punjab.gov.pk

- Video Wall Expert
- Solution architect (solution, network, hardware)
- Data center expert
- Handholding staff
- Trainers
- Facilities management engineer

The systems/equipment shall consist of a high capacity, high availability in according to relevant International Standards. The details of equipment's to be installed at MBS Stations, Corridor & Command and Control Centre are available with descriptions, to give an overview of the system/equipment requirements at Annex-K.

13. Functional Requirements

All the systems/ equipment's shall provide high availability with 99.5% uptime 24h/7d, 365 days a year alongwith the onsite installation, commissioning, calibration, integration, testing, operation & maintenance as per SLA. The bidders are required to submit their proposals against the entire system.

14. Other high-level requirements

14.1 IT Systems must have following features:

14.1.1 Availability of user-definable criteria and rules for various functions/ auto alerts.

14.1.2 Inventory report of stock in hand and in use.

14.1.3 Online dashboard based on configurable parameters.

14.1.4 Report writer for generating quick on the fly reports/analysis.

14.1.5 Ability to generate automated alerts – e.g. SMS, email, fax.

14.1.6 User security roles definition and availability of interface to reassign roles.

14.1.7 Secure, reliable and password protected system.

14.1.8 Detailed audit log of critical user activities in the system.

14.1.9 Automated data backup facility.

way, of the most recent or current model, imported through proper channel, and incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.

39.2 The Contractor shall further warrant that the Goods/Services supplied by the Contractor, under the Contract shall have no defect, arising from design, materials, workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied Goods/Services.

39.3 Free, on site repair / replacement of defective / damaged parts and labor. Engage and deploy suitably skilled personnel for development, installation, operation and maintenance of the IT system, and maintenance/replacement of all related equipment/components in a timely manner and at its own cost during the course of the contract.

39.4 The Contractor must, within the prescribed time period as per Service Level Agreement, after/in anticipation of any complaint/notice, repair or replace the defective / damaged Goods/Equipment/Software/Items or parts thereof on site, without any cost to The Purchaser.

40. Execution Schedule

The Contractor shall submit an Execution Schedule, giving details of services rendered, as required under the Contract, to the Client, within five (5) days of the signing of the Contract.

41. Payment

41.1 The Contractor shall submit an Application for Payment (Invoice), in the prescribed form, to the Client. The Application for Payment shall: be accompanied by such invoices, receipts or other documentary evidence as the Client may require; state the amount claimed; and set forth in detail, in the order of the Price Schedule, particulars of the Services provided, up to the date of the Application for Payment and subsequent to the period covered by the last preceding Certificate of Payment, if any.

41.2 The Contractor shall issue invoices to the Purchaser on a calendar month basis, i.e. on 1st working day of the month following the month in which services have been rendered.

41.3 The Contractor shall not issue any invoice to the Purchaser until the following delivery conditions have been met:

41.3.1 Complete Delivery/Quantitative Inspection

41.3.2 Qualitative Inspection

41.3.3 Commissioning.

41.4 Subject to Clause No. 41.3 above, the Contractor may issue the first invoice after the occurrence of any one of the following two dates i.e. (A) and (B):

A. Date of commencement of Metrobus Operation in Multan provided that non-fulfillment of any of the delivery conditions mentioned in clause 41.3 above, solely due to reason(s) attributable to unavailability of station(s)/site shall be deemed to have been fulfilled.

B. 180 days after the issuance of LOA subject to complete fulfillment of all of the delivery conditions mentioned in clause 41.3 above, provided that non-fulfillment of any of the delivery conditions solely due to reason(s) attributable to unavailability of station(s)/site/Non-commencement of Metrobus Operation in Multan shall be deemed to have been fulfilled.

41.5 Invoices issued for the period subject to Clause 41.4 in Multan shall include, 70% of total price inclusive of Sales Tax on Services, mentioned in the Price Table. The monthly payments for the

remaining number of months up till the duration of the Contract shall be made based on the formula as given below:

$$M = [Z \times 72 - (m \times 0.7 \times Z) - (m \times om)] / (72 - m)$$

Where

M = monthly payment after 'm' number of months

Z = Bid price

m = Number of months of payments made at 70% of Z

om = monthly O&M price component for C&C

- 41.6** The Purchaser shall issue a Certificate of Payment, in the prescribed form, with a copy to the Contractor, verifying the amount due, within fifteen days of receipt of an Application for Payment. The Purchaser shall deduct the amount of penalties that may be levied in accordance with the SLA (Annexure-J), against the exclusive of Sales Tax amount mentioned in the Invoice and recalculate Sales Tax amount, while issuing the Certificate of Payment. The Client may withhold a Certificate of Payment on account of defect(s) / short coming(s) in the services provided. The Client may make any correction or modification in a Certificate of Payment that properly be made in respect of any previous certificate.
- 41.7** The Purchaser shall pay the amount verified in the Certificate of Payment within fifteen (15) days of receipt of a Certificate of Payment provided that the Contractor furnishes a sales tax invoice within such period. Payment shall not be made in advance. The Purchaser shall make payment for the Services provided, to the Contractor, as per payment schedule **through crossed cheque.**
- 41.8** Payments shall be made against successful delivery of services per each Phase of the Program
- 41.9** No advance payments will be made. Monthly payments will be made on a prorated basis by the Purchaser, taking into account the number of stations, Corridor and C&CC for which IT System has been successfully provisioned.
- 41.10** The Purchaser at its discretion may withhold the forth invoice after the commencement of Operations if the Contractor fails to obtain the User Acceptance Test (UAT) from the Purchaser.

42. Contract Price

The Contractor shall not charge prices for the equipment and services provided and for other obligations discharged, under the Contract, varying from the prices quoted by the Contractor in the Financial Proposal (Form of Bid/Financial Proposal Submission Form) or not agreed by the Purchaser as per this Contract. The quoted price, in the financial bid, is inclusive of all applicable taxes, as per Laws of the Government of Pakistan, except Sales Tax on Services which shall be added by the Purchaser over and above the quoted amount, as applicable/required under the relevant Tax Laws, to arrive at the Contract Price. Accordingly, the Contract Price shall be subject to adjustments for change in rate of Sales Tax on Services as and when applicable, as well as subject to Clause 41.5.

43. Contract Amendment

- 43.1** The Purchaser may, at any time, by written notice served on the Contractor, alter, amend, omit, increase, decrease quantity and scope, of all / any of the Services / the Works, in whole or in part.
- 43.2** The Contractor shall, within ten working days of receipt of such notice, submit a cost estimate and execution schedule of the proposed change (hereinafter referred to as the Change), to the

	<p>Controller(s) for above screens with Control Software:</p>	<p>Should feature built-in integration of digital network video streams / IP Camera Streams and required hardware for conversion to analog streams or other data sources</p> <p>Should allow users to place windows of any size anywhere on the video wall, without any compromises on quality</p> <p>The controller shall provide independent color depth selection of video, RGB, and graphic window</p> <p>The controller should support the display of real-time IP Camera video sources through operator work stations (14 inputs and 24 outputs).</p> <p>The controller shall feature redundant, hot-swappable critical components for high overall system reliability including Redundant hot- swap power supplies, Redundant hot-swap RAID Level 1 or RAID Level-5 hard disk, Redundant Ethernet / Fiber Optic adapter</p> <p>The redundancy components shall be continuously monitored; audio and video alarms shall be triggered in case of failure</p> <p>The controller should support video outputs up to 1920 x 1082 pixels and Mega Pixels Format</p> <p>The controller should provide real-time source display</p> <p>The controller shall be equipped with latest processor technology.</p> <p>The controller should support Network and other inputs</p> <p>The controller should have Outputs for above screen matrix</p> <p>Inputs of for above LCD Real-time DVI/RGB inputs, image resolution 1920 x 1080 pixel and should display real-time input sources through operator work stations.</p>			
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SERVER FORM (MID RANGE BLADE SERVERS)

Compute Blades (Quad Processor Xeon Blades)		Yes	No	10
1	Installed Processors	2 x Intel XeonE5-2600V3 (2.30GHz/10 core) or higher		
2	Max Processors Supported	4 Processors		-
3	RAM	64GB Installed (Scalable upto 512GB or Higher)		
4	Integrated NIC's	2-Port 1 Gigabit Network Adapter/mezz		
5	10Gig NIC's	2-Port (10 Gigabit Network Adapter/FC)		
6	Hard Disk Drives	2 x 600G 10K 2.5" SAS HDD		

Installation	Onsite Cabling electrical along with Installation / calibration/ Testing with accessories including Piping/Ducting, electrification Etc. Testing & Commissioning, integration of entire Site System			
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Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):			
Direct / Authorized Distributor/Dealership certificate (Offered Brand)			
Agreed to provide the requisite quantity with in time frame:			
Agreed to provide the required warranty of the equipment:			
Agreed with other terms & conditions:			
Signed & Stamped documents:			

NOTE:
1. Maximum down time for all components including replacement of the whole unit as per SLA.
2. Please mention the country of origin/manufacturing/assembly of the quoted brand/model.
3. Vendor/Assembler to provide verification of serial numbers of all products.

- 4- The local authorized dealers should mention their service and setup, details of qualified engineers, etc.
- 5- The vendor is responsible for the installation Configuration, Management, software, Server Operating System,

NOTE:

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2. Please mention the country of origin/manufacturing/assembly of the quoted brand/model.
3. Vendor/Assembler to provide verification of serial numbers of all products.
- 4- The local authorized dealers should mention their service and setup, details of qualified engineers, etc
- 5- The vendor is responsible for the installation Configuration, Management, software, Server Operating System, and provides training for the efficient configuration and management of the system.

SAN STORAGE (500 TB)

SAN Storage Solution (High End) - 500 TB					
S#	ITEM	DESCRIPTION	Yes	No	Qty
	SAN Storage Solution		-	-	1
1	Architecture	Multi-Protocol storage, supporting simultaneous FC & iSCSI Access			
2	Cache	Minimum 48 GB cache for Storage Controllers			
3	Storage Controller	Redundant Storage Controllers with Active-Active configuration			
4	Front End Ports	8 x 8Gbps FC Ports for SAN (Required) or 4 x 10Gbps iSCSI Ports for SAN (Required)			
5	Supported Protocols	FC, iSCSI			
6	RAID	Supporting RAID 0, 1, 5, 6, 10			
7	Redundancy	End to end redundant connections with no single point of failure			
8	RAW Storage	5 x 400GB SSD Drives (Used as SSD Caching to Improve overall system Performance) (125 x 4TB) or any other combination 3.5 Inch 7.2k NL-SAS Disk Drives			
9	FC Cables	8 x 5m Fiber Optic Cable LC-LC			
10	Modular Design	Should have a Modular Design. Ability to Add or Replace Host connectivity Ports as Required			
11	Multi-path Software	Multi-path software providing path fail-over for all blades connecting to storage			
12	Power & Cooling	Redundant power and cooling			
13	Rack Rails	Rack mount kit with all accessories			
14	Management	Management software along with Storage			
15	Expandability	Should support a minimum of 350 Disk drives or more			
16	Drive Form Factor	Should support both 2.5" /3.5" Disk Drives			

STORAGE (100 TB) (Direct Attached Storage)

IF PMA management want to save specified video clips/record for a longer period of time i.e. more than 30 days they will be saved on DAS.

S#	ITEM	DESCRIPTION	Yes	No	Qty
Storage Solution					
			-	-	1
1	Architecture	Multi-Protocol storage, supporting simultaneous FC & iSCSI Access			
2	Cache	Minimum 16 GB cache for Storage Controllers			
3	Storage Controller	Redundant Storage Controllers with Active-Active configuration			
4	Front End Ports	4 x 10Gbps iSCSI/FC Ports for SAN (Required)			
5	Supported Protocols	FC, iSCSI			
6	RAID	Supporting RAID 0, 1, 5, 6, 10			
7	Redundancy	End to end redundant connections with no single point of failure			
8	RAW Storage	(25 x 4TB) or any other combination 3.5 Inch 7.2k NL-SAS Disk Drives			
9	FC Cables	8 x 5m Fiber Optic Cable LC-LC			
10	Modular Design	Should have a Modular Design. Ability to Add or Replace Host connectivity Ports as Required			
11	Multi-path Software	Multi-path software providing path fail-over for all blades connecting to storage			
12	Power & Cooling	Redundant power and cooling			
13	Rack Rails	Rack mount kit with all accessories			
14	Management	Management software along with Storage			
15	Expandability	Should support a minimum of 150 Disk drives or more			
16	Drive Form Factor	Should support both 2.5" and 3.5" Disk Drives			
17	SAN to SAN Replication optional	Support SAN to SAN Replication (If Required in Future)			

Offered Brand (Attachments):	Provide Name	Yes	No
Make / Brand Name:			
Model Name:			
Sub-Model (if any):			
Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):			
Direct / Authorized Distributor/Dealership certificate (Offered Brand)			
Agreed to provide the requisite quantity with in time frame:			
Agreed to provide the required warranty of the equipment:			

3. Vendor/Assembler to provide verification of serial numbers of all products.
4. The local authorized dealers should mention their service and setup, details of qualified engineers etc.

IP TELEPHONY

SR. No.	ITEM	DESCRIPTION	Yes	No	Qty
1	IP Phone (Executive) (Hard phone)	Hard IP Phone for executive with color screen display alongwith standard features to connect through LAN to call manager etc.			40 Nos.
2	IP Phone (Non-Executive) (Hard phone)	Hard IP Phone for non-executive with mono screen display alongwith standard features to connect through LAN to call manager etc.			24 Nos.
3	IP Phone (Non-Executive) (Hard phone)	Hard IP Phone with mono screen display alongwith standard features to connect through LAN to call manager etc.			06 Nos.

Boucher / Technical Datasheet with Make, Model (Sub-Model (if any)):		
Direct / Authorized Distributor/Dealership certificate (Offered Brand)		
Agreed to provide the requisite quantity with in time frame:		
Agreed to provide the required warranty of the equipment:		
Agreed with other terms & conditions:		
Signed & Stamped documents:		

NOTE:

1. Maximum down time for all components including replacement of the whole unit as per SLA.
2. Please mention the country of origin/manufacturing/assembly of the quoted brand/model.
3. Vendor/Assembler to provide verification of serial numbers of all products.
4. The local authorized dealers should mention their service and setup, details of qualified engineers etc.

	Features	Data Center Core Switches (Data Center) Description	Unit No's	QTY 02	Compliance	
					Yes	No
Data Center Core Switches (Data Center)	Chassis	Modular chassis				
	High Availability	1+1 Routing Engine Redundancy Redundant Switch Fabric Redundant Power Supplies				
	Backplane Speed	1 Tbps or higher				
	Throughput	960 Mpps or higher				
	Layer 2 features	Jumbo frames (9216 Bytes) <ul style="list-style-type: none"> • 4,096 VLANs • VLAN Registration Protocol (GVRP) • Private VLAN (PVLAN) • 802.3ad – Link Aggregation Control Protocol (LACP) • 802.1D – Spanning Tree Protocol (STP) • 802.1w – Rapid Spanning Tree Protocol (RSTP) • 802.1s – Multiple Instance Spanning Tree Protocol (MSTP) • VLAN Spanning Tree Protocol (VSTP) • IEEE 802.1p: Class-of-service (CoS) prioritization • IEEE 802.3u: 100BASE-T • IEEE 802.3ab: 1000BASE-T • IEEE 802.3z: 1000BASE-X 				

		Signed & Stamped documents: _____ -				
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		Data Center Firewall (Data Center)		Unit	QTY	Compliance	
Features	Description	No's	02	Yes	No		
Firewall performance	55 Gbps						
IPS performance	15 Gbps						
AES256+SHA-1 / 3DES+SHA-1 VPN performance	15 Gbps						
Maximum concurrent sessions	2.25 M sessions or more						
New sessions/second	270,000 or more						
available slots	6 slots	-	-	-	-		
Fixed I/O ports	Minimum 8 10/100/1000 BaseT						
LAN interface options	16 x 1 10/100/1000 copper 16 x 1 Gigabit Ethernet small form-factor pluggable transceivers (SFP) 2 x 10 Gigabit Ethernet XFP						
High-availability support	Active/Passive, Active/Active or Interface aggregation groups across chassis cluster						
	Application Identification						
	Application Denial of Service Protection (AppDoS)						
	AppTrack						
	AppQoS						
	AppFW						
Firewall	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						
	GPRS stateful inspection						
Intrusion Prevention System	Stateful protocol signatures						
SERVICES	SERVICES						