



# FINANCIAL PROPOSAL - GRMPSI



Sibton Switch Systems  
Cocoshe House No. B 28A  
Agostino Neto Road  
Airport Residential Area  
Accra, GHANA

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4<sup>th</sup> July, 2016

**Tender Package No.: BOG/TS/0007/2016**

The Secretary's Department,  
Bank of Ghana,  
4th Floor, High Street,  
Room No. 422  
Accra  
Tel. No. 0302 666902 Ext 4471

Dear Sir/Madam,

**Submission of Financial Proposal: Tender for the Implementation of the Ghana Retail Payment Systems Infrastructure.**

We, the undersigned, offer to provide the Technical Services for the Implementation of the Ghana Retail Payment Systems Infrastructure in accordance with your Request for Proposal dated May 2016 and our Proposals (Technical and Financial).

Our attached Financial Proposal is for the sum of GH¢ 111,214,801.00 amount of the CAPEX and OPEX for 1<sup>ST</sup> year of operation ONLY. The above first year sum is made up of CAPEX of GH¢ 89,017,147.00 and OPEX GH¢ 22,197,654. Whiles first year of post-pilot operation will be of GH¢ 41,235,688,00. This amount is exclusive of local taxes.

We have secured funding sources and propose revenue options that will allow for reasonable payback period for the implementation costs. This will be at fee rates for use of the systems that will also ensure recovery of operational expenses and a profit margin without hampering Ghana's financial inclusion agenda.

Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal, i.e. 3<sup>rd</sup> October, 2016 (90 days from the 4<sup>th</sup> of July, 2016).

Yours Sincerely,

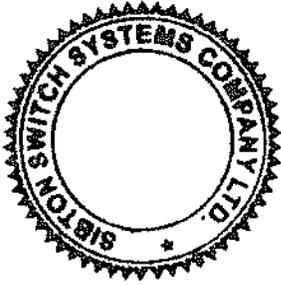
George Qu  
  
4/7/16

~~George Qu~~  
7/4/16

04/07/2016

Keiko S. Watanabe  
Director

Duly authorized to sign the tender for and on behalf of Sibton Switch Systems Limited and TimesofMoney.



**GHANA RETAIL PAYMENT SYSTEMS INFRASTRUCTURE  
SUMMARY OF INVESTMENT OVER THE PROJECT LIFE SPAN - 25 YEARS**

GHS

SITE INFRASTRUCTURE	(488,657,388.87)
LICENSE FEE & COSTS	(108,328,500.00)
EQUIPMENT (HARDWARE & SOFTWARE)	(153,251,104.71)
OTHER OFFICE EQUIPMENT	(14,610,020.50)
MOTOR VEHICLES	(134,067,399.81)
OFFICE FURNITURE & FITTINGS	(18,198,238.37)
OFFICE COMPUTERS AND SOFTWARE	(9,978,261.13)
GENERAL & ADMIN EXPENSES	(3,742,322,927.43)
<b>TOTAL EXPENDITURES</b>	<b>(4,669,414,340.82)</b>



#### KEY ASSUMPTIONS AND PAYMENT TERMS

1. Revenue streams have assumed base on the following revenue stream:
  - i. PER TRANSACTION: Based on 60% commission earn per transaction of 90 peswas per Ghs100.
  - ii. Per Integration Boarding
  - iii. Annual Maintenance fees
2. Available statistics indicated that money transferred over the mobile money transfer platform increased from Ghs171M in 2012 to Ghs36B in 2015 (20,952% increment). Whilst absolute value of money transferred continues to increase year on year, percentage growth year on year continues to decline. It is envisaged that this trend will continue until the sector become well-regulated and customers' confidence increase. An annual increment on transaction of 1.17% with the base Ghs36B have been assumed over the entire project.
3. Project infrastructure set up is assumed to be six months after which commercial activities will begin. Thus income for the first year has been assumed to gross over six months only.
4. Exchange rate for the cedi to the dollar has been assumed at Ghs4.5/US\$. The limitation to this exchange rate is obvious. However, since it is difficult to predict any tariff change and hence, commission of the EMI on transfers, especially as the mobile money transfer platform becomes more robust and grows, it has been assumed that such future upward adjustments in tariff and commissions will mitigate any impact of exchange rate fluctuations on revenue as projected here.

	TOTAL	YR 1	YR 2	YR 3	YR 4	YR 5
	GHS	GHS	GHS	GHS	GHS	GHS
<b>REVENUE</b>						
MOBILE MONEY	5,357,421,046	94,500,000	191,211,300	193,448,472	195,711,819	198,001,648
<b>TOTAL REVENUE</b>	<b>5,357,421,046</b>	<b>94,500,000</b>	<b>191,211,300</b>	<b>193,448,472</b>	<b>195,711,819</b>	<b>198,001,648</b>
less						
<b>LICENSE FEES</b>						
LICENSE FEE FOR CENTRALIZED REPORTING & MONITORING PLATFORM	(6,187,500)	(6,187,500)	-	-	-	-
LICENSE FEE FOR CENTRALIZED INTEROPERABILITY	(8,100,000)	(8,100,000)	-	-	-	-
LICENSE FEE FOR CENTRALIZED e-KYC	(6,075,000)	(6,075,000)	-	-	-	-
ANNUAL MAINTENANCE COST OF LICENSES(TOM)	(87,966,000)	-	(3,665,250)	(3,665,250)	(3,665,250)	(3,665,250)
<b>TOTAL LICENSE COSTS</b>	<b>(108,328,500)</b>	<b>(20,362,500)</b>	<b>(3,665,250)</b>	<b>(3,665,250)</b>	<b>(3,665,250)</b>	<b>(3,665,250)</b>
CAPEX						
ICT EQUIPMENT (HARDWARE/SOFTWARE)						
<b>NETWORK</b>						

<b>FIRE WALL</b> (Firewall 6M concurrent session, 8GBps throughput, 4X GE RJ45 Ports, 4X GE SFP Slots UTM Bundle (NGFW, AV, Web filter & Antispam Services)	(8,062,435)	(251,833)	-	-	(327,383)	-
<b>FIRE WALL - Log Analyser</b> (5GB logs/day, 150+ devices, 1 TB Storage, 120+ Analytic Sustaine Rate (logs/sec) & 350 Collector Sustained Rate (log/sec)).	(1,234,046)	(38,546)	-	-	(50,110)	-
<b>SWITCH</b> (L2 Manageable Switches 48 ports Gig E, 4X 1G SFP, LAN Base).	(2,230,424)	(69,668)	-	-	(90,569)	-
<b>LOAD BALANCER</b> (Load balancer   WAF, 375,000+ requests/sec & 6500+ SSL request/sec, 5GBps throughput, 10GE SFP+; SR, LR, With compression, Application security, SSL offloading & Content switching)	(28,813,498)	(900,000)	-	-	(1,170,000)	-
<b>SERVERS</b>	-	-	-	-	-	-
<b>WEB &amp; APPLICATION</b> (Risc architecture, 32 Core 4.13GHz CPU, 256GB DDR3 RA, 2* 600 GB SAS-2 HDD, 4 *GbE, 2* Dual FC HBA).	-	-	-	-	-	-
<b>DATA BASE</b> (Risc architecture, 32 Core 4.13GHz CPU, 256GB DDR3 RA, 2* 600 GB SAS-2 HDD, 4 *GbE, 2* Dual FC HBA).	-	-	-	-	-	-
<b>INFRA</b> (Intel® Xeon X5460 @ 3.16ghz cpu, 2*12 Cores, 96 GB RAM 300X2 HD 2 XFC Cable).	(7,725,075)	(241,295)	-	-	(313,684)	-
<b>BACKUP</b> (Virtual server)	-	-	-	-	-	-
<b>EMAIL</b> (Virtual server)	-	-	-	-	-	-

MONITORING (Virtual server)	-	-	-	-	-	-	-	-
CONSOLE (Virtual server)	-	-	-	-	-	-	-	-
EXTERNAL COMMUNICATION SERVER (Virtual server)	-	-	-	-	-	-	-	-
LOG (Virtual server)	-	-	-	-	-	-	-	-
<b>REPORTING</b>	-	-	-	-	-	-	-	-
APPLICATION (Virtual server)	-	-	-	-	-	-	-	-
DATA BASE (Virtual server)	-	-	-	-	-	-	-	-
ETL (Virtual server)	-	-	-	-	-	-	-	-
<b>CALL CENTRE</b>	-	-	-	-	-	-	-	-
CRM App (Virtual server)	-	-	-	-	-	-	-	-
CRM Dp (Virtual server)	-	-	-	-	-	-	-	-
CIM App (Virtual server)	-	-	-	-	-	-	-	-
CIM Dp (Virtual server)	-	-	-	-	-	-	-	-
AGEMA GATEWAY (Physical Hardware)	-	-	-	-	-	-	-	-
CALL SERVER (Intel Xeon (R) CPU, E5-2620 cores, 16 GB RAM.	(2,484,692)	(77,610)	-	-	-	(100,893)	-	-
PRI Line (inbound & outbound) 30 Channels	-	-	-	-	-	-	-	-
Toll Free or Phone number	-	-	-	-	-	-	-	-
SAN SWITCH (San Switch 36 ports, 8.5 Gbit/sec line speed, full duplex or higher; 8Gbit/sec ISL truck port	(17,288,099)	(540,000)	-	-	-	(702,000)	-	-
<b>STORAGE</b>	-	-	-	-	-	-	-	-
<b>STORAGE</b> (Dual controller, 2.2GHz Xeon cpu Quad core, 24 GB, 1/10 Gbe optical, 8 Gbps FC, 8TB Storage, 600* 27 SAS 15K rpm HDD with SSD and Raid 10 support.	(7,731,094)	(241,484)	-	-	-	(313,929)	-	-

BACK UP STORAGE (Dual controller, 2.2GHz Xeon cpu Quad core, 24 GB, 1/10 Gbe optical, 8 Gbps FC, 4TB Storage, 600* 14 SAS 15K rpm HDD with SSD and Raid 10 support.	(6,459,698)	(201,771)	-	-	(262,302)	-
TAPE LIBRARY (2 heads or drivers, 30+ slots FC connectivity	(2,881,350)	(90,000)	-	-	(117,000)	-
TAPES (LTO-5)	(1,944,911)	(60,750)	-	-	(78,975)	-
<b>SOFTWARE</b>	-	-	-	-	-	-
OPERATING SYSTEM (Solaris, Cent OS, Windows 2012 (5 CAL))	-	-	-	-	-	-
PRESENTATION TIER (Apache)	-	-	-	-	-	-
BUSINESS LOGIC TIER (Ibss or Weblogic)	-	-	-	-	-	-
DATA TIER (Mysql and Oracle License)	-	-	-	-	-	-
ORACLE RAC	-	-	-	-	-	-
ORACLE DATA GUARD	-	-	-	-	-	-
WINDOW USER EXTERNAL CONNECTOR	-	-	-	-	-	-
MONITORING SOFTWARE ( Monitoring software with 100+ devices and 3+ GB logs/day support	-	-	-	-	-	-
CIM SOFT WARE AND AGENT LICENSES	-	-	-	-	-	-
CRM AGENT LICENSE	-	-	-	-	-	-
EMAIL SOFTWARE/CLOUD EMAIL	-	-	-	-	-	-
MS SQL	-	-	-	-	-	-
McAfee Antivirus	-	-	-	-	-	-
VMWARE (V sphere 5 Essentials plus for 3 hosts Symantec)	(3,893,424)	(121,613)	-	-	(158,096)	-
BACK UP SOFT WARE (Symantec)	-	-	-	-	-	-
<b>COOLING SYSTEM</b>	-	-	-	-	-	-

PRECISION ACC FOR DATA CENTRE (8.5 Tonnes for 20x15 ft)	(2,161,012)	(67,500)				(87,750)	
PRECISION AC FOR DISASTER RECOVERY CENTRE 1 (8.5 Tonnes for 20x15 ft)	(2,161,012)	(67,500)				(87,750)	
PRECISION AC FOR DISASTER RECOVERY CENTRE 2 (8.5 Tonnes for 20x15 ft)	(2,161,012)	(67,500)				(87,750)	
PRECISION AC FOR DISASTER RECOVERY CENTRE 3 (8.5 Tonnes for 20x15 ft)	(2,161,012)	(67,500)				(87,750)	
SMART PDU (POWER MONITORING DEVICE) FOR DATA CENTRE	(4,519,412)	(141,165)				(183,515)	
SMART PDU (POWER MONITORING DEVICE) FOR DISASTER RECOVERY 1	(4,519,412)	(141,165)				(183,515)	
SMART PDU (POWER MONITORING DEVICE) FOR DISASTER RECOVERY 2	(4,519,412)	(141,165)				(183,515)	
SMART PDU (POWER MONITORING DEVICE) FOR DISASTER RECOVERY 3	(4,519,412)	(141,165)				(183,515)	
WIMAX Infrastructure	(24,874,259)	(1,950,000)				-	(2,535,000)
WAN Equipment	(1,435,053)	(112,500)				-	(146,250)
GEN SET AND UPS		(742,500)					(965,250)
TOTAL EQUIPMENT	(153,251,105)	(6,474,232)				(4,770,001)	(3,646,500)
SITE INFRASTRUCTURE							
BOIM-DATA CENTRE	(51,266,596)	(5,669,140)					
BOIM - DATA RECOVERY	(384,499,466)	(42,518,546)					
HOSTING H/QRT OFFICE	(50,058,041)	(5,535,496)					
BCP (H/QTR HOSTING)	(2,833,287)	(313,309)					

<b>TOTAL SITE INFRASTRUCTURE</b>	[488,657,389]	(54,036,491)	-	-	-	-
<b>MOTOR VEHICLE</b>						
Motor Vehicles Saloon	(18,784,534)	(787,500)	-	-	-	(1,102,500)
Motor Vehicles Pick Ups	(34,348,861)	(1,440,000)	-	-	-	(2,016,000)
Motor Vehicles 4x4	(80,505,144)	(3,375,000)	-	-	-	(4,725,000)
Motor Bikes	(429,361)	(18,000)	-	-	-	(25,200)
<b>TOTAL MOTOR VEHICLES</b>	<b>(134,067,900)</b>	<b>(5,620,500)</b>	-	-	-	<b>(7,868,700)</b>
<b>OFFICE EQUIPMENT</b>						
Airconditions	(2,029,499)	(115,425)	-	-	-	(150,053)
Refrigerators	(1,305,526)	(74,250)	-	-	-	(96,525)
Televisions	(1,186,842)	(67,500)	-	-	-	(87,750)
Projectors	(989,035)	(56,250)	-	-	-	(73,125)
CCTV Equipment	(1,978,069)	(112,500)	-	-	-	(146,250)
Photocopier Machines	(3,560,525)	(202,500)	-	-	-	(263,250)
PABX System	(3,560,525)	(202,500)	-	-	-	(263,250)
<b>TOTAL OFFICE EQUIPMENT</b>	<b>(14,610,020)</b>	<b>(830,925)</b>	-	-	-	<b>(1,080,203)</b>
<b>OFFICE FURNITURE &amp; FITTINGS</b>						
Office Furniture	(9,494,733)	(540,000)	-	-	-	(702,000)
Curtains & Blinds	(4,747,367)	(270,000)	-	-	-	(351,000)
Others	(3,956,139)	(225,000)	-	-	-	(292,500)
	42,786,520	-	-	-	-	-
<b>TOTAL OFFICE FURNITURE &amp; FITTINGS</b>	<b>(18,198,238)</b>	<b>(1,035,000)</b>	-	-	-	<b>(1,345,500)</b>
<b>Computer &amp; Softwares</b>						
Laptops	(3,296,782)	(187,500)	-	-	-	(243,750)
Desk Computer	(3,296,782)	(187,500)	-	-	-	(243,750)
Printers	(1,406,627)	(80,000)	-	-	-	(104,000)
Computer Software	(1,978,069)	(112,500)	-	-	-	(146,250)

<b>TOTAL COMPUTER &amp; Softwares</b>	(9,978,261)	(567,500)	-	-	-	-	(737,750)
<b>TOTAL CAPEX</b>	(818,762,913)	(68,564,647)	-	-	-	(4,770,001)	(14,678,653)
<b>GENERAL &amp; ADMINISTRATION EXPENSES</b>							
Insurance	(416,819,878)	(3,126,137)	(3,501,273)	(3,921,426)	(4,391,997)	(4,919,036)	
Rent	(25,464,751)	(745,200)	(745,200)	(819,720)	(819,720)	(901,692)	
Electricity & Water	(1,803,880,964)	(768,000)	(998,400)	(1,297,920)	(1,687,296)	(2,193,485)	
Internet, Telephone & Postages	(37,175,188)	(378,000)	(415,800)	(457,380)	(503,118)	(553,430)	
Local Travel & Transport	(11,454,504)	(240,000)	(252,000)	(264,600)	(277,830)	(291,722)	
Foreign Travel & Hotel Accommodation	(56,576,636)	(900,000)	(1,080,000)	(1,296,000)	(1,555,200)	(1,866,240)	
Repairs and Maintenance - Buildings	(1,718,176)	(36,000)	(37,800)	(39,690)	(41,675)	(43,758)	
Repairs and Maintenance - Vehicles	(18,040,843)	(378,000)	(396,900)	(416,745)	(437,582)	(459,461)	
Repairs & Maintenance - Others	(11,064,044)	(112,500)	(123,750)	(136,125)	(149,738)	(164,711)	
Fuel & Lubricants - Vehicles	(26,290,074)	(432,000)	(518,400)	(622,080)	(746,496)	(895,795)	
Fuel & Lubricants - Others	(33,419,241)	(162,000)	(194,400)	(233,280)	(279,936)	(335,923)	
Printing & Stationeries	(5,154,527)	(108,000)	(113,400)	(119,070)	(125,024)	(131,275)	
Legal and Professional Fees	(8,263,259)	(180,000)	(180,000)	(198,000)	(198,000)	(217,800)	
Security Services	(6,610,607)	(144,000)	(144,000)	(158,400)	(158,400)	(174,240)	
Cleaning & Sanitation	(17,628,286)	(384,000)	(384,000)	(422,400)	(422,400)	(464,640)	
Salaries & wages	(743,503,769)	(7,560,000)	(8,316,000)	(9,147,600)	(10,062,360)	(11,068,596)	
Other HR COSTS	(148,700,754)	(1,512,000)	(1,663,200)	(1,829,520)	(2,012,472)	(2,213,719)	
Bank Charges	(26,787,105)	(472,500)	(956,057)	(967,242)	(978,559)	(990,008)	
Bank Interest & Finance Costs	(81,008,333)	(675,000)	(15,000,000)	(15,666,667)	(16,500,000)	(16,500,000)	
Business Permit, License & Renewals	(2,212,809)	(22,500)	(24,750)	(27,225)	(29,948)	(32,942)	
Project monitoring Expenses	(8,100,000)	(2,700,000)	(600,000)	(600,000)	(600,000)	(600,000)	
Other expenses	(98,204,284)	(1,161,817)	(1,925,109)	(2,084,960)	(2,262,813)	(2,426,922)	
<b>TOTAL GENERAL &amp; ADMINISTRATION EXPENSES</b>	(3,588,078,033)	(22,197,654)	(37,570,438)	(40,726,050)	(44,240,562)	(47,445,396)	
<b>TOTAL OUTFLOW</b>	(4,515,169,447)	(111,124,801)	(41,235,688)	(44,391,300)	(52,675,813)	(65,789,298)	

NET INFLOW / (OUTFLOW) BEFORE TAXATION	842,251,599	(16,624,801)	149,975,612	149,057,172	143,096,006	132,212,350
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CAPITAL EXPENDITURES						
DETAILS	YEAR 1-5		YEAR 6-10	YEAR 11-15	YEAR 6-10	TOTAL
	USD		USD			USD
<b>SITE INFRASTRUCTURE</b>						
BOM-DATA CENTRE	629,904					629,904
BOM - DATA RECOVERY	5,669,140					5,669,140
HOSTING H/QRT OFFICE	615,055					615,055
BCP (H/QTR HOSTING)	69,624					69,624
<b>TOTAL SITE INFRASTRUCTURE</b>	<b>6,983,723</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>6,983,723</b>
<b>MOTOR VEHICLES</b>						
Motor Vehicles Saloon	60,000		70,000			130,000
Motor Vehicles Pick Ups	80,000		100,000		-	180,000
Motor Vehicles 4x4	225,000		300,000		-	525,000
Motor Bikes	4,000		5,000		-	9,000
<b>SUB TOTAL</b>	<b>369,000</b>		<b>475,000</b>		<b>-</b>	<b>844,000</b>
<b>OFFICE EQUIPMENT</b>						
Airconditions	3,300		3,300			6,600
Refridgerators	2,250		2,250			4,500
Televisions	900		900			1,800
Projectors	625		625			1,250
WIMAX Infrastructure	609,375					609,375
WAN Equipment	10,000					10,000
CCTV Equipment	10,000					10,000
Photocopier Machines	5,000		5,000			10,000
PABX System	10,000		-			10,000
Others	-		-		-	-
<b>SUB TOTAL</b>	<b>651,450</b>		<b>12,075</b>			<b>663,525</b>
<b>OFFICE FURNITURE &amp; FITTINGS</b>						
Office Furniture	15,000		15,000			30,000
Curtains & Blinds	10,000		10,000			20,000
Others	6,000		6,000			12,000
<b>SUB TOTAL</b>	<b>31,000</b>		<b>31,000</b>			<b>62,000</b>
<b>Computer &amp; Softwares</b>						
Laptops	1,575		1,575			3,150
Desk Computer	638		638			1,275
Printers	4,800		4,800			9,600
Computer Software	7,500					7,500
<b>SUB TOTAL</b>	<b>14,513</b>		<b>7,013</b>			<b>21,525</b>
<b>GRAND TOTAL</b>	<b>8,049,686</b>		<b>525,088</b>	<b>-</b>	<b>-</b>	<b>8,574,773</b>

ICT EQUIPMENT (HARDWARE/SOFTWARE)				
S.NO	ITEM DESCRIPTION/DESIRED CONFIGURATION	Qty	UNIT Price USD	Total (USD)
<b>NETWORK</b>				
1	FIRE WALL (Firewall 6M concurrent session, 8GBps throughput, 4X GE RJ45 Ports, 4X GE SFP Slots UTM Bundle (NGFW, AV, Web filter & Antispam Services)	2.00	27,981.45	55,962.90
2	FIRE WALL - Log Analyser (5GB logs/day, 150+ devices, 1 TB Storage, 120+ Analytic Sustaine Rate (logs/sec) & 350 Collector Sustained Rate (log/sec)).	1.00	8,565.75	8,565.75
3	SWITCH (L2 Manageable Switches 48 ports Gig E, 4X 1G SFP, LAN Base).	4.00	3,870.45	15,481.80
4	LOAD BALANCER (Load balancer + WAF, 375,000+ request/sec & 6500+ SSL request/sec, 5GBps throughput, 10GE SFP+; SR, LR. With compression, Application security, SSL offloading & Content switching)	2.00	100,000.00	200,000.00
<b>SERVERS</b>				
5	WEB & APPLICATION (Risc architecture, 32 Core 4.13GHz CPU, 256GB DDR3 RA, 2* 600 GB SAS-2 HDD, 4 *GbE, 2* Dual FC HBA).	4.00	-	-
6	DATA BASE (Risc architecture, 32 Core 4.13GHz CPU, 256GB DDR3 RA, 2* 600 GB SAS-2 HDD, 4 *GbE, 2* Dual FC HBA).	2.00	-	-
7	INFRA (Intel * Xeon X5460 @ 3.16ghz cpu, 2*12 Cores, 96 GB RAM 300X2 HD 2 XFC Cable).	3.00	17,873.74	53,621.22
8	BACKUP (Virtual server)	1.00	-	-
9	EMAIL (Virtual server)	1.00	-	-
10	MONITORING (Virtual server)	1.00	-	-
11	CONSOLE (Virtual server)	1.00	-	-
12	EXTERNAL COMMUNICATION SERVER (Virtual server)	1.00	-	-
13	LOG (Virtual server)	1.00	-	-
<b>REPORTING</b>				
14	APPLICATION (Virtual server)	2.00	-	-
15	DATA BASE (Virtual server)	2.00	-	-
16	ETL (Virtual server)	2.00	-	-
<b>CALL CENTRE</b>				
17	CRM App (Virtual server)	2.00	-	-
18	CRM Dp (Virtual server)	2.00	-	-
19	CIM App (Virtual server)	2.00	-	-
20	CIM Dp (Virtual server)	2.00	-	-
21	MEDIA GATEWAY (Physical Hardware)	2.00	-	-
22	CALL SERVER (Intel) Xeon (R) CPU, E5-2620 cores, 16 GB RAM.	2.00	8,623.36	17,246.72
23	PRI Line (inbound & outbound) 30 Channels	30.00	-	-
24	Toll Free or Phone number	-	-	-
25	SAN SWITCH (San Switch 36 ports, 8.5 Gbit/sec line speed, full duplex or higher; 8Gbit/sec ISL truck port	2.00	60,000.00	120,000.00
<b>STORAGE</b>				
26	STORAGE (Dual controller, 2.2GHz Xeon cpu Quad core, 24 GB, 1/10 Gbe optical, 8 Gbps FC, 8TB Storage, 600* 27 SAS 15K rpm HDD with SSD and Raid 10 support.	1.00	53,663.00	53,663.00
27	BACK UP STORAGE (Dual controller, 2.2GHz Xeon cpu Quad core, 24 GB, 1/10 Gbe optical, 8 Gbps FC, 4TB Storage, 600* 14 SAS 15K rpm HDD with SSD and Raid 10 support.	1.00	44,838.00	44,838.00
28	TAPE LIBRARY (2 heads or drivers, 30+ slots FC connectivity	1.00	20,000.00	20,000.00
29	TAPES (LTO-5)	27.00	500.00	13,500.00
<b>SOFTWARE</b>				
30	OPERATING SYSTEM (Solaris, Cent OS, Windows 2012 (5 CAL))	8.00	-	-
31	PRESENTATION TIER (Apache)	-	-	-
32	BUSINESS LOGIC TIER (Jboss or Weblogic)	16.00	-	-
33	DATA TIER (Mysql and Oracle License)	10.00	-	-
34	ORACLE RAC	8.00	-	-
35	ORACLE DATA GUARD	8.00	-	-
36	WINDOW USER EXTERNAL CONNECTOR	2.00	-	-
37	MONITORING SOFTWARE (Monitoring software with 100+ devices and 3+ GB logs/day support	1.00	-	-
38	CIM SOFTWARE AND AGENT LICENSES	10.00	-	-
39	CRM AGENT LICENSE	10.00	-	-
40	EMAIL SOFTWARE/CLOUD EMAIL	50.00	-	-
41	MS SQL	2.00	-	-
42	McAfee Antivirus	8.00	-	-
43	VMWARE (V sphere 5 Essentials plus for 3 hosts Symantec)	1.00	27,025.00	27,025.00
44	BACK UP SOFTWARE (Symantec)	1.00	-	-