

## **TERMS OF REFERENCE**

### **Disaster Recovery Data Center Co-location and ICT Equipment Phase 2**

#### **Background:**

The Department of Tourism's (DOT) day to day operation involves the smooth flow of information from, to and within the different operating units and to or from several clienteles. Taking into consideration the speed, quality and redundant links to access online system for both DOT operating units and clienteles with minimum downtime or no downtime at all. Which is necessary for today age of information technology. In addition, keeping systems and data in secured location is important for the Department to provide much needed services to clienteles.

Considering this, there is a need for the DOT to procure disaster recovery data center to provide ICT equipment, internet and co-location services, which can deliver the above services base on the peculiar and unique need of the Department's operating units. Currently, Department of Tourism (DOT) does not have a disaster recovery data center, which will automatically backup, mirror both site and operates when the primary data center goes down.

#### **Objectives**

- Ensure that the DOT operation will not be hamper and maintain its working condition.
- Ensure that the DOT central data center have active mirror site operational at the same time and serve as DOT disaster recovery data center.
- To capacitate the IT Infrastructure Team with proper knowledge on how to configure, install, deploy, and maintain the DOT newly installed infrastructure.

#### **Scope of Services:**

- I. List of ICT Equipment with technical Specification, deliverables and compliance:
  - a. Shall deliver, install and configure ten (10) unit's application server for Production and DR Site, four (4) unit's Network switch for Production and DR Site, two (2) load balancers for Production and DR Site, and its corresponding software such as but not limited to operating system, database, etc. and including the appropriate cables, wiring, and railings. In addition, all other cables, wiring and railings that comes with the box should be included to ensure that the servers are ready for installation.
  - b. Delivery shall be free of charge within Metro Manila and Clark Freeport Pampanga.
  - c. Preferably with knowledge on how the DOT Disaster Recovery Data Center was built for easier installation, configuration and deployment and also to avoid re-configuration and re-deployment of the DOT

Disaster Recovery Data Center Phase 1 which usually take a minimum of 2 month.

- d. All software installed in all units must have a box, copy of license agreement and a serial number. These items must be turned over to DOT and to keep the software registered and updated.
- e. The ICT equipment shall be 100% compatible with the DOT's new installed infrastructure both on hardware and software level.
- f. No alternate solution for non – conformity to newly installed infrastructure with regards to capability and features.
- g. Capability and features must be compatible with existing Microsoft and Dell ICT infrastructure of DOT.
- h. Provision and changes of license/application such as but not limited to Microsoft Server, Microsoft SharePoint, other Microsoft Products and other licenses/applications required for the operation of the existing DOT application system.
- i. The server must be updated to its latest security protection and all service package must be installed.
- j. Shall provide 5-year maintenance for the servers and software, free of charge after deployment.
- k. 5-year warranty, for spare parts and labor. Spare parts are readily and immediately available for replacement of defective part/s.
- l. Shall provide four (4)-hour response time upon receipt of call and next business day on-site visit when necessary. Warranty provisions of SCC.
- m. Shall assist the DOT in the installation of its application system in the server.
- n. The IT supplier claiming, providing and submitting false information during procurement process shall be immediately disqualify from the bidding. This is for the Department and committee protection from dishonest supplier purposely providing ICT equipment that are but not limited to overpricing, non-compliance ICT equipment, toy like ICT equipment, etc.
- o. Shall provide Administrator Training and Server Management Training to IT Division.
- p. Shall provide complete documentation such as but not limited to server connection diagram, listing, paper licenses, etc....
- q. Shall provide administration manual and user manual.
- r. Shall provide training certificates to trainee.
- s. Shall provide at least 2 IT personnel to oversee monitor and perform on-site support after installation and configuration of server, twice a week for a period of 2 months.

## II. IT Supplier Requirement

- a. Must submit certification of authorized partner.
- b. Must provide at least one (1) central toll-free hotline number and e-mail address of the brand being offered.

- c. On - site support shall be provided by the manufacturer on the Next Business Day after final remote diagnosis for delivered items within Metro Manila and 3 days outside Metro Manila
- d. On - site support engineers and technicians should carry a valid manufacturer's ID and certification from the brand or manufacturer of the delivered ICT equipment especially on desktop, laptop and servers.
- e. Unit model must be current and not in "end of Life" as reflected in the current product line found in the manufacturer's official website and brochure. A manufacturer's certificate for this purpose is required.
- f. Certification from the brand and product manufacturer that the brand and product parts being offer will be available and serviceable for at least five (5) years after delivery and acceptance.
- g. All components must conform to international standards and should be factory installed with corresponding part number and verifiable via web.
- h. The manufacturer brand must have at least two parts depot within the country to ensure sufficient number of spare parts.

### III. Payment:

- a. The 90% of the payment will be release upon 100% completion of installation, configuration and deployment of ICT equipment but the DOT has the right to terminate / cancel the project with or without notice even while in the middle of the project when observe that the IT firm cannot delivered and fully utilized the capability and features of the newly installed infrastructure of the DOT.
- b. The remaining 10% of the payment will be release upon delivery of the training voucher and documentation of the project.
- c. The payment for co-location will be on a monthly basis.

### IV. Technical Specification

#### 1. Disaster Recovery Data Center must have

##### 1.1. Provide the following services:

- 1.1.1. Location : Clark Freeport, Pampanga
  - ❖ Must be TIA – 942 Rated 3 Certified
- 1.1.2. Co-location and Internet Direct Services (IDS) as follows:
  - ❖ 2 Full Rack for servers and other peripherals
    - 4KVA redundant power
    - 21°C ambient temperature and 50%RH in the cold aisle of the server area
    - 42U rack
  - ❖ IPSec VPN Tunnel
  - ❖ Free Actual Power/Electric Consumption
- 1.1.3. Carrier-neutral facility which provides an interconnection point for other telecom companies
- 1.1.4. Multi-threat Secure inclusive of:
  - ❖ Next Generation Firewall
    - Firewall Throughput (HTTP/appmix) : 500 / 580 Mbps
    - Threat Prevention Throughput (HTTP/appmix): 240 /

- 280Mbps
- IPsec VPN Throughput: 500 Mbps
- Max sessions: 64,000
- New sessions per second: 4,200
- I/O Ports: 10/100/1000 (8)
- Management I/O Ports:
  - 10/100/1000 out-of-band
  - management port(1)
  - Rj-45 console port (1)
  - USB port (1)
  - Micro USB console port (1)
- Storage Capacity: at least 32GB eMMC
- Power Supply (Avg/Max Power Consumption)
  - Dual redundant 40W (21W / 25W)
- Max BTU/hr: at least 102
- Input Voltage: 100 – 240 V AC (50-60Hz)
- Max Current Consumption:
  - Firewall: 1.75 A @ 12 VDC
  - Power supply (AC side): 0.5 A @ 100 VAC, 0.2 A @ 240 VAC
- ❖ Intrusion Prevention System
- ❖ Antivirus
- ❖ Antispam
- ❖ Antibot
- ❖ DDOS
- ❖ SSL traffic inspection
- ❖ Identity awareness, URL filtering, Application Control
- ❖ Managed firewall policies
- ❖ Monitoring dashboard for viewing security events and high-level forensics
- 1.1.5.24 x 7 physical security and network management and support
  - ❖ 24 x 7 helpdesk will be available through phone and email
- 1.1.6.Telco-grade co-location facility; Triplicate power supply (commercial feed, generator set and battery) with UPS/ATS functionality, redundant air-conditioning, raised-flooring, and fire-prevention and suppression systems.
  - ❖ Uninterruptible Power Supply (UPS)
    - 2N, 900kVA, 15 min back-up for CRAC supply
    - 2N, 900kVA, 15 min back-up for IT supply
  - ❖ Backup Generators
    - N+1, 2.5mW capacity
    - Seventy-two (72) hours continuous operation without commercial power
    - Priority delivery arrangement with fuel provider
- 1.1.7.99.99% server-to-internet access uptime
- 1.1.8.Deliver and maintain the server co-location with a service level agreement of 99.99%. Customer Service Centre facilitates

communications between customers and various technical levels within the service provider on a 24 hour x 7 days a week basis.

1.2. Server co-locations should include the following:

1.2.1. Co-location space

1.2.2. Ethernet port and cabling

1.2.3. Unlimited maintenance visits

1.2.4. 24 x 7 technical assistance

1.2.5. Data Centre Securities to include Network Monitoring System (Base and Remote), IP Surveillance Cameras, Biometric Access

- ❖ Heating, Ventilation and Air-conditioning (HVAC)
  - N+1, 360TR Water-cooled chillers
  - N+1, 30TR CRAC
- ❖ Network Backbone Architecture
  - Network is carrier-agnostic
  - Dual service entrance
- ❖ Building Management System
  - 24 x 7 monitoring and controlling of field devices such as lighting and HVAC are in place
- ❖ Fire Suppression System
  - Gas-based (NOVEC 1230) fire suppression system at the equipment area, ceiling and under floor void
  - Clean-agent fire suppression gives no harmful effect to the environment after a fire extinguishing agent has been discharged
  - Provision for Fire Exit
- ❖ Raised Floor Specifications
  - 61cm x 61cm (24" x 24") panels
  - 750cm vertical clearance under-floor
  - 1,200kg/sqm floor loading
- ❖ Support
  - 24 x 7 Helpdesk, phone and email support
  - Remote Hands
  - 24 x 7 site access to customer
- ❖ Security
  - 11-layer Security
  - 24 x 7 Physical Access Security
  - Use of both swipe card and biometric authentication for access control
  - Video surveillance cameras located in strategic areas of the building and its perimeter. Six (6) months video retention

2. Provide Data Centre with the following specifications:

- ❖ Modular type of racks
- ❖ For ISO and LEED certification
- ❖ 24 x 7 x 356 technical support
- ❖ Highly redundant and availability of network infrastructure
- ❖ Downblast of cold air with precision air cooling CRAC type units
- ❖ Separate room space (i.e. cage options)

- ❖ Should support/be compatible with the DOT's network infrastructure and email collaboration platform
3. Building Structural Requirement
    - ❖ Stand-alone building, built for Data Center purposes.
    - ❖ Designed in accordance with the National Structure Code of the Philippines using the highest consideration for building construction, maximum security and safety.
    - ❖ It is Seismic Zone 4 compliant and can withstand an Intensity 8 earthquake.
    - ❖ Area/Floor should be exclusive to hosted/co-located equipment, no office spaces for people.
    - ❖ Raised or overhead air-conditioning
    - ❖ Overhead or under flooring support for power or network cabling
    - ❖ Reasonably free from dust/dirt
    - ❖ No water leakages
    - ❖ Provision for bolting servers to the floor
  4. Mechanical Requirement
    - ❖ Secured for personnel & Data Center equipment.
    - ❖ Facilities for hauling/transporting ICT equipment within the area.
  5. Electrical Requirement
    - ❖ Appropriate power rating for DOT equipment
    - ❖ Redundant electrical systems
    - ❖ Redundant Uninterruptible Power Supplies
    - ❖ Presence of grounding
    - ❖ Dedicated panel and circuit breaker for DOT equipment
  6. Air Conditioning System
    - ❖ Constant temperature should be within the range of 18c to 22c
    - ❖ Humidity should be between 20% to 80% RH
    - ❖ Redundant Air Conditioning Unit
  7. Hauling Requirement
    - ❖ Equipment relocation from one site to another
    - ❖ Disconnecting
    - ❖ Dismantling
    - ❖ Packaging
    - ❖ Transporting
    - ❖ Insuring
    - ❖ Un packaging
    - ❖ Assemblings
    - ❖ Connecting: Power/Network
  8. Provider must have its own IT Technical Team present in the location
    - ❖ 1 Solution Architect, 1 Senior System Engr, 3 Junior System Engr
    - ❖ Must provide IT organizational chart
    - ❖ Must provide photocopy Identification (ID) of each IT personnel
    - ❖ Must be directly hired by the provider
    - ❖ No outsourcing of IT Technical Team
  9. Additional Component

Service	Qty
Copper Cross Connect	1
Internet line (per mbps)	40
Excess KVA	1

## 2. ICT Equipment

ITEM	QTY	DESCRIPTION
1	10	<b>Application Server</b>
		1 x PowerEdge R740/R740XD Motherboard
		2 x Intel Xeon Silver 4210 2.2G, 10C/20T, 9.6GT/s, 13.75M Cache, Turbo, HT (85W) DDR4-2400
		1 x iDRAC Group Manager, Enabled
		1 x Additional Processor Selected
		1 x iDRAC Service Module (ISM), Pre-Installed in OS
		1 x iDRAC, Legacy Password
		1 x Chassis with up to 8 x 2.5" SAS/SATA Hard Drives for 2CPU Configuration
		1 x PowerEdge 2U LCD Bezel
		1 x Riser Config 5, 6 x8, 2 x16 slots
		1 x 14G OpenManage placemat
		1 x PowerEdge R740 Shipping (APCC/Taiwan), for 1300W below, V2
		1 x PowerEdge R740 Shipping Material
		1 x Luggage Tag
		1 x Quick Sync 2 (At-the-box mgmt)
		1 x Performance Optimized
		1 x 2666MT/s RDIMMs
		12 x 8GB RDIMM, 2666MT/s, Single Rank
		1 x iDRAC9, Enterprise
		1 x 64GB microSDHC/SDXC Card
		1 x IDSDM and Combo Card Reader

	2 x 300GB 15K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive
	2 x QLogic 2690 Single Port 16Gb Fibre Channel HBA, PCIe Full Height
	1 x PERC H740P RAID Controller, LP Adapter
	1 x 6 Standard Fans for R740/740XD
	1 x Fresh Air Cooling
	2 x Standard 1U Heatsink
	1 x DVD+/-RW,SATA,Int
	1 x Dual, Hot-plug, Redundant Power Supply (1+1), 750W
	2 x NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP, 10 Feet (3m), Power Cord, North America
	2 x Jumper Cord, C13 to C14, 250V, 10A, 2m
	1 x Trusted Platform Module 2.0
	1 x PowerEdge R740/R740XD CE Marking, APCC, for 1300W PSU below
	1 x Broadcom 5720 Quad Port 1GbE BASE-T, rNDC
	2 x Broadcom 57416 Dual Port 10GbE BASE-T Adapter, PCIe Full Height

	1 x Windows Server 2019 Standard,16CORE,FI,No Med, No CAL, Multi Language
	2 x Windows Server® 2019 Standard Edition, Add License,2CORE,NO MEDIA/KEY
	1 x Windows Server 2019 Standard,16CORE,Media Kit, Multi Language
	1 x Windows Server 2019 Standard,No Media,WS2016 STD Downgrade Media, Multi Language
	1 x No Systems Documentation, No OpenManage DVD Kit
	1 x For SADMG Countries only - No Installation Service Required
	1 x Partner Operations Support B2B
	1 x Integration Information
	1 x Power Saving Active Power Controller
	1 x Ex-factory Delivery



		1 x ReadyRails Sliding Rails With Cable Management Arm
		1 x RAID 1
		1 x UEFI BIOS Boot Mode with GPT Partition
		1 x OpenManage Enterprise Advanced
		1 x Windows Server 2019 Standard,16CORE,Digitally Fulfilled Recovery Image, Multi Language
		1 x Basic Next Business Day 36 Months-Emerging DBS
		1 x ProSupport Plus and 4Hr Mission Critical Initial-Emerging DBS, 36 Month(s)
		1 x ProSupport Plus and 4Hr Mission Critical Extension-Emerging DBS, 24 Month(s)
		1 x Same Business Day Onsite Diagnosis Service Emerging DBS, 60 Month(s)
		1 x Mod Specs Info (Philippines)
2	2	<b>Network Switch</b>
		<b>2 x EMC Switch S4128T-ON, 1U, 28 x 10Gbase-T, 2 x QSFP28, IO to PSU, 2 PSU, OS10</b>
		2 x Jumper Cord, C13 to C14, 250V, 10A, 2m
		1 x Networking, Cable, QSFP+ to QSFP+, 40GbE Passive Copper Direct Attach Cable, 0.5 m
		1 x Boxing Label Mod
		1 x OS10 Enterprise S4128T-ON
		1 x For SADMG Countries only - No Installation Service Required
		1 x Partner Operations Support B2B
		1 x Technical Support-VN,PK,PH,BN
		1 x Networking, S41xx, User Documentation
		1 x Info Mod - Factory Pass Through Process
		1 x Limited Warranty:Yr1 Return to Depot (Parts)-VN,PK,PH,BN
		1 x 5Yr ProSupport Plus & Mission Critical:(7x24) 4-hour Onsite Service-VN,PH,BN
		1 x Yr1 ProSupport Plus & Mission Critical:(7x24) 4-hour Onsite Service-VN,PH,BN

		1 x Yr2-5 ProSupport Plus & Mission Critical:(7x24) 4-hour Onsite Service-VN,PH,BN
		1 x 5Yr ProSupport Plus & Mission Critical:(7x24) Technical Support & Assistance-VN,PH,BN
		1 x 5Yr Same Business Day Onsite Diagnosis Service - Vn,Ph&Bru (Per system warranty SLA)
		1 x Mod Specs Info (Philippines)
		1 x Ex-factory Delivery
3	1	<b>Management Network Switch with UPS</b>
		<b>1 x Networking N1524, 24x 1GbE + 4x 10GbE SFP+ fixed ports, Stacking, IO to PSU airflow, AC [Management Switch - With UPS]</b>
		1 x MOD INFO ex factory DLVRY
		1 x Networking, N1500, User Documentation
		2 x Jumper Cord, 12A, 2M, C13/C14
		1 x RPS720 External Redundant Power Supply (Non-POE) Up To 4 Switches
		1 x Networking, Cable, SFP+ to SFP+, 10GbE, Copper Twinax Direct Attach Cable, 0.5 Meter
		1 x Boxing Label Mod
		1 x For SADMG Countries only - No Installation Service Required
		1 x Lifetime Limited Standard Technical Support-VN,PK,PH,BN,SL,BD
		1 x Lifetime Limited Hardware Warranty (Parts)-VN,PK,PH,BN,SL,BD
		1 x 5Yr ProSupport Plus and Mission Critical: (7x24) 4-hour Onsite Service-VN,PH,BN
		1 x ##Prosupport Plus and Mission Critical: 4-hour (7x24) Onsite Service,1-5Yr- Indo, Vn, Ph & Bru
		1 x ## Prosupport Plus and Mission Critical: 7x24 Technical Support & Assistance: 5Yr - Indo,Vn,Ph & Bru
		1 x Enclosure for Mounting up to 3xMPS600 or 3xMPS1000 in 1U, Brackets Included
		1 x Info Mod - Factory Pass Through Process
		1 x 5Yr Same Business Day Onsite Diagnosis Service - Vn,Ph&Bru (Per system warranty SLA)
		1 x Mod Specs Info (Philippines)

4	1	<b>Network Switch for management</b>
		1 x <b>Networking N1524, 24x 1GbE + 4x 10GbE SFP+ fixed ports, Stacking, IO to PSU airflow, AC [Management Switch ]</b>
		1 x MOD INFO ex factory DLVRY
		1 x Networking, N1500, User Documentation

		2 x Jumper Cord, 12A, 2M, C13/C14 (Guam, North Marianas, Philippines, Samoa)
		1 x Networking, Cable, SFP+ to SFP+, 10GbE, Copper Twinax Direct Attach Cable, 0.5 Meter
		1 x Boxing Label Mod
		1 x For SADMG Countries only - No Installation Service Required
		1 x Lifetime Limited Standard Technical Support-VN,PK,PH,BN,SL,BD
		1 x Lifetime Limited Hardware Warranty (Parts)-VN,PK,PH,BN,SL,BD
		1 x 5Yr ProSupport Plus and Mission Critical: (7x24) 4-hour Onsite Service-VN,PH,BN
		1 x ##Prosupport Plus and Mission Critical: 4-hour (7x24) Onsite Service,1-5Yr- Indo, Vn, Ph & Bru
		1 x ## Prosupport Plus and Mission Critical: 7x24 Technical Support & Assistance: 5Yr - Indo,Vn,Ph & Bru
		1 x Enclosure for Mounting up to 3xMPS600 or 3xMPS1000 in 1U, Brackets Included
		1 x Info Mod - Factory Pass Through Process
		1 x 5Yr Same Business Day Onsite Diagnosis Service - Vn,Ph&Bru (Per system warranty SLA)
		1 x Mod Specs Info (Philippines)
5	1	<b>KVM Switch Set</b>
		1 x DMPU2016-G01 16-port remote KVM switch with 2 remote users, 1 local user, dual power supply
		1 x LED KMM, 18.5", 1U, International English Keyboard - DKMMLED185 - 001
		1 x DMPUIQ-VMCHS for SIM for VGA interface. For DMPU Console PE KVMs, VM, CAC & USB2.0

		1 x DRMK-77 oneU KVM mounting bracket for 185FPM and DKMMLED185 LED KMM Console	
		1 x 5 Years Gold Extended Warranty for DMPU2016 16 port digital KVM 7X24 Level	
		5 Years Gold Extended Warranty for DKMMLED185 7X24 Level	
		1 x CS_PCISO_OMNM-25-5_Dorado - 25 device Right to Manage(RTM), 5 Year Subscription of OpenManage NM (OMNM) v8	
6	2	<b>Load Balancer</b>	
		Application Throughput (L4/L7)	30 Gbps / 30 Gbps
		Layer 4 CPS	750K
		Layer 4 HTTP RPS	3 Million
		Layer 4 Concurrent Sessions	64 Million
		Layer 7 CPS (1:1)*1	280K
		SSL Bulk Throughput*2	11 Gbps
		SSL CPS*2	RSA: 30K ECDSA: 20K
		DDoS Protection (SYN Flood) SYN/sec	8 Million
		Application Delivery Partitions (ADP)	64
		1 GE Copper	6
		1 GE Fiber (SFP)	2
		1/10 GE Fiber (SFP+)	4
		40 GE Fiber (QSFP+)	0
		Management Ports	1 x Ethernet Mgmt port, 1 x RJ-45 console port, 1 x Lights Out Management
		Processor	Intel Xeon 4-core
		Memory (ECC RAM)	16 GB
		Storage	SSD
		Hardware Acceleration	Software
		Rack Units (Mountable)	1U
		Power Supply (DC option available)	Dual 600W RPS 80 Plus Platinum efficiency, 100 - 240 VAC, 50 – 60 Hz

		Power Consumption (Typical/Max)*3	180W / 240W
		<b>Application Delivery</b>	<p>Comprehensive IPv4/IPv6 Support</p> <p>Advanced Layer 4/Layer 7 Server Load Balancing</p> <p>Fast HTTP, Full HTTP Proxy</p> <p>High-performance, templatebased Layer 7 switching with header/URL/domain manipulation</p> <p>Comprehensive Layer 7 application persistence support</p> <p>FTP, DNS, FIX and more</p> <p>Comprehensive load balancing methods</p> <p>Round Robin, Least Connections, Weighted RR, Weighted LC, Fastest Response, &amp; more</p> <p>aFleX – deep packet inspection and transformation for customizable, application-aware switching</p> <p>Advanced Health Monitoring</p> <p>Comprehensive Protocol</p>

		<p><b>Application Delivery</b></p>	<p>Support – ICMP, TCP, UDP, HTTP, HTTPS, FTP, RTSP, SMTP, POP3, SNMP, DNS, RADIUS, LDAP and more  Scriptable health check support using TCL, Python, Perl, Bash  High Availability – Active-Active, Active-Standby configurations  STARTTLS support for Secure Email &amp; LDAP  Network Traffic Filtering – highspeed processing of large black/ white lists  Firewall Load Balancing (FWLB)  Global Server Load Balancing (GSLB)  Traffic steering/Service chaining</p>
		<p><b>Application Acceleration</b></p>	<p>HTTP Acceleration and Optimization  - HTTP Connection Multiplexing (also called TCP connection reuse)  - RAM Caching - HTTP Compression • SSL Offload - SSL Termination, SSL Bridging  - SSL Proxy - SSL session ID reuse  TCP optimization support including Selective Acknowledgment, Client KeepAlive and Window Scaling  HTTP Pipelining support  SPDY protocol support</p>

		<p><b>Application Security</b></p>	<p>Web Application Firewall (WAF)  DNS Application Firewall (DAF)  Integrated DDoS protection for application services  Hardware-based DDoS protection  Application Access Management (AAM) — SAML, WIA, Kerberos, NTLM, TDS SQL Logon, LDAP, RADIUS, Basic, OCSP stapling, HTML Form-based  AAM RADIUS-based audit support  Single sign-on (SSO) authentication relay  Authentication for Microsoft SharePoint, Outlook Web Access, and other packaged and custom applications  Comprehensive SSL/TLS support      TLS 1.2 and 4096-bit SSL key support      Perfect Forward Secrecy (PFS) with Elliptic Curve Diffie-Hellman Exchange (ECDHE) and other Elliptic Curve  Cryptography (ECC) ciphers      AES-NI and GCM ciphers  IP Anomaly Detection  Connection Rate Limiting/  Connection Limiting  Bandwidth Rate Limiting per Source IP  Dynamically add IPs to Black/White Lists  Support for Simple Certificate Enrollment Protocol (SCEP)  Hardware Security Module (HSM) support      Internal HSM card*      External network HSM</p>
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		<b>Threat Intelligence Service</b>	Dynamically updated threat intelligence feed
		<b>Scalable, High-Performance Platform</b>	Advanced Core Operating System (ACOS) Multi-core, Multi-CPU support Linear application scaling ACOS on data plane Linux on control plane IPv6 feature parity
		<b>Networking</b>	Integrated Layer 2/Layer 3 Transparent Mode/Gateway Mode Routing – Static Routes, IS-IS (v4/ v6), RIPv2/ng, OSPF v2/v3, BGP4+ VLAN (802.1Q) Link Aggregation (802.1AX), LACP Access Control Lists (ACLs) Traditional IPv4 NAT/NAPT IPv6 NAPT Jumbo Frame support* Hardware-accelerated VXLAN* NVGRE
		<b>IPv6 Migration/IPv4 Preservation</b>	Full native IPv6 management and feature support SLB-PT (Protocol Translation), SLB-64 (IPv4<->IPv6, IPv6<->IPv4) Carrier Grade NAT (CGN/CGNAT), Large Scale NAT (LSN), NAT444, NAT44, NAT46 Integrated DDoS protection for NAT pools NAT64/DNS64, DS-Lite, 6rd, LW4o6 ALG protocol support for protocols with dynamic ports like SIP and FTP



	<p><b>Management</b></p>	<p>Dedicated on-box management interface (GUI, CLI, SSH, Telnet)  Web-based AppCentric Templates (ACT) support SNMP, syslog, email alerts, NetFlow v9 and v10 (IPFIX), sFlow  RESTful API (aXAPI)  LDAP, TACACS+, RADIUS support  Configurable control CPUs  Interoperable with A10 Harmony Controller for centralized management, configuration and analytics  Plug-in available for VMware vRealize Orchestrator deployments</p>
	<p><b>Virtualization</b></p>	<p>aVCS (Virtual Chassis System)  vThunder Virtual Appliance for VMware vSphere ESXi, Microsoft Hyper-V, KVM (VirtIO, Open vSwitch with DPDK and SR-IOV), Amazon Web Services (AWS) AMI, and Microsoft Azure VHD  Thunder ADC for Bare Metal  Multi-tenancy with Application Delivery Partitions (ADP)  Partition-based management  L3 virtualization  Hypervisor acceleration and management integration</p>
	<p><b>Infrastructure Training</b></p>	

	<p><b>EMC Networking – Data Center Configuration and Administration Course Voucher FY 2020-2022</b></p> <p><b>Inclusive of:</b></p> <ul style="list-style-type: none"> <li>Location: Preferably Singapore</li> <li>International Airfare Ticket</li> <li>Training Certificate</li> <li>Manual</li> <li>Laboratory (Equipment: Server, Storage, Network Appliance, etc..)</li> </ul> <p><b>Module:</b></p> <ul style="list-style-type: none"> <li>Data Center Network Overview</li> <li>Basis Switch Configuration</li> <li>Virtual LANs</li> <li>Spanning-Tree Protocol (STP)</li> <li>Link Aggregation Groups (LAG)</li> <li>Virtual Link Trunking (VLT)</li> <li>Discovery Protocols</li> <li>Basic Routing</li> <li>Open Shortest Path First (OSPF)</li> <li>Border Gateway Protocol (BGP)</li> <li>Virtual Router Redundancy Protocol (VRRP)</li> <li>Uplink Failure Detection</li> <li>Policy Based Routing</li> <li>Virtual Routing and Forwarding (VRF)</li> <li>Security</li> <li>Quality of Service (QoS)</li> <li>Dynamic Host Configuration Protocol (DHCP)</li> <li>Multicast</li> </ul> <p>SmartFabric Services</p>
	<p><b>EMC SC Series Implementation and Administration Course Voucher FY 2020-2022</b></p> <p><b>Inclusive of:</b></p> <ul style="list-style-type: none"> <li>Location: Preferably Singapore</li> <li>International Airfare Ticket</li> <li>Training Certificate</li> <li>Manual</li> <li>Laboratory (Equipment: Server, Storage, Network Appliance, etc..)</li> </ul> <p><b>Module:</b></p> <ul style="list-style-type: none"> <li>Storage Fundamentals and Hardware</li> <li>Storage Center Cabling, Installation and Configuration</li> <li>Storage Center Volume, Snapshot, Data Progression and Server Management</li> <li>Remote Instant Replay and Storage Center Management</li> </ul> <p>Laboratory Exercise</p>

		<p><b>EMC PowerEdge Installation Management and Diagnostics Course Voucher FY 2020-2022</b></p> <p><b>Inclusive of:</b>  Location: Preferably Singapore  International Airfare Ticket  Training Certificate  Manual  Laboratory (Equipment: Server, Storage, Network Appliance, etc..)</p> <p><b>Module:</b>  Server Platforms and Integrated Dell Remote Access  Server Components  Unified Extensible Firmware Interface (UEFI) and Troubleshooting  Security and System Management  Laboratory Exercise</p>
7	3	<p><b>Installation, Storage, and Compute with Windows Server 2016 Course Voucher FY 2020-2022</b></p> <p><b>Inclusive of:</b>  Full Course Meals (Breakfast, Lunch, Dinner)  Accommodation (Live-in Training)  Training Certificate  Microsoft Certificate  Examination  Laboratory (Equipment: Server, Storage, Network Appliance, etc..)  Disaster Recovery implementation</p> <p><b>Module:</b>  Install, upgrade, configure local storage, migrating servers and workloads  Implement enterprises storage solution and data duplication  Install, configure and manage Hyper-V  High availability and disaster recovery implementation  Implement and manage failover cluster for Hyper-V virtual machines  Implement and deploy network load balancing  Create and manage deployment images  Manage, monitor and maintain virtual machine installations  Laboratory exercise</p>

8	3	<p><b>Identify with Windows Server 2016 Course Voucher FY 2020-2022</b></p> <p><b>Inclusive of:</b>  Full Course Meals (Breakfast, Lunch, Dinner)  Accommodation (Live-in Training)  Training Certificate  Microsoft Certificate  Examination  Laboratory (Equipment: Server, Storage, Network Appliance, etc..)  Disaster Recovery implementation</p> <p><b>Module:</b>  Install, configure and manage active directory domain services (AD DS)  Advance AD infrastructure management  Implement and manage group policy  Deploy and manage AD certificate services  Monitor, manage and recover AD DS  Laboratory exercise</p>
9	3	<p><b>Database Administration Fundamentals Course Voucher FY 2020-2022</b></p> <p><b>Inclusive of:</b>  Full Course Meals (Breakfast, Lunch, Dinner)  Accommodation (Live-in Training)  Training Certificate  Microsoft Certificate  Examination  Laboratory (Equipment: Server, Storage, Network Appliance, etc..)  Disaster Recovery implementation</p> <p><b>Module:</b>  <b>Understand core database concepts</b>  <b>Database objects</b>  <b>Data manipulation</b>  <b>Understand data storage</b>  <b>Administering database</b>  <b>Laboratory exercise</b></p>
10	3	<p><b>Additional Task and Services</b></p>
11	3	<ul style="list-style-type: none"> <li>• Should be able to use existing storage from main site</li> </ul>
12	3	<ul style="list-style-type: none"> <li>• Should be able to use existing storage from DR site</li> </ul>
		<ul style="list-style-type: none"> <li>• Should be able to use existing SAN switch and create additional zoning</li> </ul>
		<ul style="list-style-type: none"> <li>• Must join existing active directory</li> </ul>
		<ul style="list-style-type: none"> <li>• Must create cluster for the additional servers</li> </ul>

		<ul style="list-style-type: none"> <li>• Must be able to live migrate virtual machine</li> </ul>
		<ul style="list-style-type: none"> <li>• Virtual machine must be Highly Available</li> </ul>
		<ul style="list-style-type: none"> <li>• Must configure NIC Teaming</li> </ul>
		<ul style="list-style-type: none"> <li>• Must configure Multi Path</li> </ul>
		<ul style="list-style-type: none"> <li>• Virtual machines on main site should have the ability to replicate to DR Site</li> </ul>

V. Summary

Item	Qty	Total Amount
Disaster Recovery Data Center(co-location) and ICT Equipment	1 Lot	36,658,308.00
Application Server	10	
Network Switch	2	
Management Network Switch with UPS	1	
Management Network Switch	1	
KVM Switch Set	1	
Load Balancer	2	
Dell EMC Networking – Data Center Configuration and Administration Course Voucher FY 2020-2022	3	
Dell EMC SC Series Implementation and Administration Course Voucher FY 2020-2022	3	
Dell EMC PowerEdge Installation Management and Diagnostics Course Voucher FY 2020-2022	3	
Installation, Storage, and Compute with Windows Server 2016 Course Voucher FY 2020-2022	3	
Identify with Windows Server 2016 Course Voucher FY 2020-2022	3	
Database Administration Fundamentals Course Voucher FY 2020-2022	3	
<b>Grand Total Amount</b>		<b>36,658,308.00</b>

**Project Cost:**

Total budget Php 36,658,308.00 inclusive of VAT chargeable against ITD funds FY 2020.

**Mode of Payment:** Government Procedure

**Delivery:** 45 calendar days upon receipt of Notice to Proceed

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