

## TERMS OF REFERENCE

### Disaster Recovery Data Center and ICT Equipment

#### 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.

#### Scope of Services:

- I. Disaster Recovery Data Center
  1. Provide the following services:
    - 1.1 Location : Clark Freeport, Pampanga
      - ❖ TIA – 942 Rated 3 Certified
    - 1.2 Co-location and Internet Direct Services (IDS) as follows:
      - ❖ 1 Full Rack for servers and other peripherals
        - 2KVA redundant power
        - 21°C ambient temperature and 50%RH in the cold aisle of the server area
        - 42U rack
      - ❖ IDS 10 Mbps (internet leased lines)
      - ❖ Free Actual Power/Electric Consumption
    - 1.3 Carrier-neutral facility which provides an interconnection point for other telecom companies
    - 1.4 Multi-threat Secure inclusive of:
      - ❖ Next Generation Firewall
      - ❖ 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

- 1.5 24 x 7 physical security and network management and support
  - ❖ 24 x 7 helpdesk will be available through phone and email
- 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
- 1.7 99.99% server-to-internet access uptime
- 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.

Server co-locations should include the following:

- ❖ Co-location space
- ❖ Ethernet port and cabling
- ❖ Unlimited maintenance visits
- ❖ 24 x 7 technical assistance
- ❖ 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:
    - a. Modular type of racks
    - b. For ISO and LEED certification
    - c. 24 x 7 x 356 technical support
    - d. Highly redundant and availability of network infrastructure
    - e. Downblast of cold air with precision air cooling CRAC type units
    - f. Separate room space (i.e. cage options)
    - g. Should support/be compatible with the DOT's network infrastructure and email collaboration platform
  3. Building Structural Requirement
    - a. Stand-alone building, owned by the bidder, built for Data Center purposes.
    - b. Designed in accordance with the National Structure Code of the Philippines using the highest consideration for building construction, maximum security and safety.
    - c. It is Seismic Zone 4 compliant and can withstand an Intensity 8 earthquake.
    - d. Area/Floor should be exclusive to hosted/co-located equipment, no office spaces for people.
    - e. Raised or overhead air-conditioning
    - f. Overhead or under flooring support for power or network cabling
    - g. Reasonably free from dust/dirt
    - h. No water leakages
    - i. Provision for bolting servers to the floor
  4. Mechanical Requirement
    - a. Secured for personnel & Data Center equipment.
    - b. Facilities for hauling/transporting ICT equipment within the area.
  5. Electrical Requirement
    - a. Appropriate power rating for DOT equipment
    - b. Redundant electrical systems
    - c. Redundant Uninterruptible Power Supplies
    - d. Presence of grounding
    - e. Dedicated panel and circuit breaker for DOT equipment
  6. Air Conditioning System
    - a. Constant temperature should be within the range of 18c to 22c

- b. Humidity should be between 20% to 80% RH
- c. Redundant Air Conditioning Unit

7. Hauling Requirement

- a. Equipment relocation from one site to another
- b. Disconnecting
- c. Dismantling
- d. Packaging
- e. Transporting
- f. Insuring
- g. Un packaging
- h. Assembling
- i. Connecting: Power/Network

8. Provider must have its own IT Technical Team present in the location

- a. Must provide IT organizational chart
- b. Must provide photocopy Identification (ID) of each IT personnel
- c. Must be directly hired by the provider
- d. No outsourcing of IT Technical Team

9. Additional Component

Service	Qty
Copper Cross Connect	1
Vitro iGate (per mbps)	40
Excess KVA	1

II. List of ICT Equipment with technical Specification and deliverables:

- a. Shall deliver, install and configure three (3) unit's application server, two (2) unit's Network switch, one (1) unit SAN storage, two (2) unit's SAN switch, one (1) unit backup server, one (1) unit firewall; 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.
- c. 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.
- d. The ICT equipment shall be 100% compatible with the DOT's new installed infrastructure both on hardware and software level.
- e. No alternate solution for non – conformity to newly installed infrastructure with regards to capability and features.
- f. Capability and features must be compatible with existing Microsoft and Dell ICT infrastructure of DOT.
- g. 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.
- h. The server must be updated to its latest security protection and all service package must be installed.

- i. Provide a full stress tests to all units from start to end for 3 consecutive days in full actual operations of DOT and shall provide test result reports. All bugs, error, misconfigurations, software problems, incompatibility, and down time connection found in each unit must fixed, replaced or pulled out. The stress test must be repeated after the resolving the problems until no problems were found, then that is the time the units will be deployed for actual DOT operations.
- 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. Shall provide Administrator Training and Server Management Training to IT Division.
- o. Shall provide complete documentation such as but not limited to server connection diagram, listing, paper licenses, etc....
- p. Shall provide administration manual and user manual.
- q. Shall provide training certificates to trainee.
- r. 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.

III. Payment:

- a. 20% of the payment shall be release upon delivery of the ICT equipment on the site.
- b. The remaining 80% will be release upon 100% completion of the project 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.
- c. Upon cancellation, the 20% must be return to DOT.

ITEM	QTY		
<b>1</b>	<b>2</b>		<b>Network Switch</b>
		1	1U, 28 x 10Gbase-T, 2 x QSFP28, IO to PSU, 2 PSU, OS10
		1	Mod Specs Mod Specs Info (SADMG)
		4	Cables - Networking Cable 100GbE, QSFP28 to QSFP28, Passive Copper Direct Attach Cable, 1 Meter
		2	Power Cords- Jumper Cord, C13 to C14, 250V, 10A, 2m
		1	Documentation/Disks - Networking, S41xx, User Documentation
		1	Software, OS10 Enterprise, S4128T-ON
		1	Base Warranty 5Yr ProSupport Plus & Mission Critical:(7x24) 4 -hour Onsite Service-VN,PH,BN (S4128T)
		1	Future Technical Support Technical Support-VN,PK,PH,BN (S4128T)
<b>2</b>	<b>3</b>		<b>Application Servers</b>
		1	Base PowerEdge R740 Server
		1	Trusted Platform Module - Trusted Platform Module 2.0
		1	Chassis Configuration - Chassis with up to 8 x 2.5" SAS/SATA Hard Drives for 2CPU Configuration
		1	Processor - Intel® Xeon® Silver 4114 2.2G, 10C/20T, 9.6GT/s 2UPI, 14M Cache, Turbo, HT (85W) DDR4 -2400
		1	Additional Processor Intel® Xeon® Silver 4114 2.2G, 10C/20T, 9.6GT/s 2UPI, 14M Cache, Turbo, HT (85W) DDR4-2400
		1	Processor Thermal Configuration 2 Standard Heatsinks for 125W or less CPUs
		1	Memory DIMM Type and Speed 2666MT/s RDIMMs
		1	Memory Configuration Type Performance Optimized
		4	Memory Capacity 16GB RDIMM, 2666MT/s, Dual Rank
		1	RAID Configuration C3, RAID 1 for 2 HDDs or SSDs (Matching Type/Speed/Capacity)
		1	RAID/Internal Storage Controllers PERC H740P RAID Controller, 8Gb NV Cache, Adapter, Low Profile
		2	Hard Drives 300GB 15K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive
		1	Embedded Systems Management iDRAC9,Enterprise
		1	Network Daughter Card Broadcom 5720 QP 1Gb Network Daughter Card
		1	PCIe Riser Riser Config 5, 6 x8, 2 x16 slots
		1	iDRAC Service Module - iDRAC Service Module (ISM), Pre-Installed in OS
		2	Additional Network Cards Broadcom 57416 Dual Port 10Gb, Base-T, PCIe Adapter, Full Height
		2	Host Bus Adapter QLogic 2560, Single Port 8Gb Optical Fibre Channel HBA
		1	BIOS and Advanced System Configuration Settings Power Saving Active Power Controller
		1	Advanced System Configurations Fresh Air Cooling UEFI BIOS Boot Mode with GPT Partition
		1	Fans 6 Standard Fans for R740/740XD
		1	Power Supply Dual, Hot-plug, Redundant Power Supply (1+1), 750W

		1	Operating System Windows Server® 2016,Standard,16CORE, Factory Inst, No MED,NO CAL, Multi -Language
		1	Licenses Windows Server® 2016,Standard Ed, Add License,16CORE,NO MEDIA/KEY
		1	OS Media Kits Windows Server® 2016,Standard,16CORE, Media Kit, Multi -Language
		1	Base Warranty 5Yr ProSupport Plus & Mission Critical:(7x24) 4-hour Onsite Service-VN,PH,BN
		1	Bezel - PowerEdge 2U Standard Bezel
		1	Rack Rails ReadyRails™ " Sliding Rails With Cable Management rm
		1	Internal Optical Drive DVD+/-RW,SATA,Int
		1	Group Manager Group Manager, Enabled
		1	Password iDRAC,Legacy Password
		1	Quick Sync 2 (at – the – boxmgmt) with mobile features
<b>3</b>	<b>1</b>		<b>SAN Storage</b>
		1	Base SCv3020 3Ux30 Drive Storage Array
		1	Front-End IO Cards IO, 16Gb FC, 2Port, PCI -E, Full height, Qty 2
		1	SCv3020 Mezz Card No Mezzanine Card, Qty 2
		1	Bezel SCv3020 Bezel
		1	SCv3020 Controller Components -SCv30X0 Dual Controller Components
		30	Hard Drives SC, 1.8TB, SAS, 12Gb, 10K, 2.5", HDD
		1	Rack Rails Rack Rails, Static
		2	Power Supply Redundant Power Supply, 1485W, C14: 200-240 VAC
		6	Front-End IO Cables LC-LC Optical Cable, 3M
		1	SAS Cables 12Gb HD-Mini to HD-Mini SAS cable, 0.5m, Qty 2
		1	Base Warranty 5Yr ProSupport Plus & Mission Critical:(7x24) 4-hour Onsite Service-VN,PH,BN
		1	Future Technical Support Technical Support- VN,PK,PH,BN,SL,BD
		1	Storage Center Base SW Storage Center Core Software Bundle, Base License Storage Center Drive License Storage Center Drive License
		1	Regulatory label Regulatory Label for Compellent SC7020/SC5020/SC3000/SCv3020 - APCC and TW
<b>4</b>	<b>2</b>		<b>SAN Switch</b>
		1	Ports-On-Demand 8Gb FC Switch (8 x 8G SFP + 16 Empty Ports)
		8	Cables 5M, Multi-Mode, LC-LC, Fibre Cable
		1	Rack Kits Fixed Rack Rails
		1	Power Cords Deskside Power Cord, 250V,10A,2M,C13 (ANZ)
		1	Base Warranty 5Yr ProSupport Plus and Mission Critical: (7x24) 4 -hour Onsite Service - Indo,Vn,Ph & Bru
		1	Software
			Ports on Demand Expansion, 8-Port (With 8Gbps SFP + License)
<b>5</b>	<b>1</b>		<b>Backup Server</b>
		1	Base PowerEdge R740 Server
		1	Trusted Platform Module - Trusted Platform Module 2.0
		1	Chassis Configuration Chassis with up to 16 x 2.5" SAS/SATA Hard Drives for 2CPU Configuration
		1	Processor Intel® Xeon® Silver 4114 2.2G, 10C/20T, 9.6GT/s 2UPI, 14M Cache, Turbo,

	1	Additional Processor Intel® Xeon® Silver 4114 2.2G, 10C/20T, 9.6GT/s 2UPI, 14M Cache, Turbo, HT (85W) DDR4-2400
	1	Processor Thermal Configuration 2 Standard Heatsinks for 125W or less CPUs
	1	Memory DIMM Type and Speed 2666MT/s RDIMMs
	1	Memory Configuration Type Performance Optimized
	4	Memory Capacity 16GB RDIMM, 2666MT/s, Dual Rank
	1	RAID Configuration C6, RAID 1 + RAID 5 for HDDs or SSDs (Matching Type/Speed/Capacity Within Each RAID Container)
	1	RAID/Internal Storage Controllers PERC H740P RAID Controller, 8Gb NV Cache, Adapter, Low Profile
	2	Hard Drives 300GB 15K RPM SAS 12Gbps 512n 2.5in Hot-plug Hard Drive
	8	Hard Drives for 2nd RAID Container 2TB 7.2K RPM NLSAS 12Gbps 512n 2.5in Hot-plug Hard Drive
	1	Embedded Systems Management iDRAC9,Enterprise
	1	Network Daughter Card Broadcom 5720 QP 1Gb Network Daughter Card
	1	PCIe Riser 2Riser Config 5, 6 x8, 2 x16 slots
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	1	BIOS and Advanced System Configuration Settings Power Saving Active Power Controller
	1	Advanced System Configurations Fresh Air Cooling UEFI BIOS Boot Mode with GPT Partition
	1	Fans 6 Standard Fans for R740/740XD
	1	Power Supply Dual, Hot-plug, Redundant Power Supply (1+1), 750W
	2	Power Cords Jumper Cord - C13/C14, 2M, 250V, 10A (TW and APCC countries except ANZ)
	1	Operating System Windows Server® 2016,Standard,16CORE,Factory Inst,No MED,NO CAL, Multi-Language
	1	Licenses Windows Server® 2016,Standard Ed, Add License,16CORE,NO MEDIA/KEY
	1	OS Media Kits Windows Server® 2016,Standard,16CORE, Media Kit, Multi-Language
	1	Base Warranty 5Yr ProSupport Plus & Mission Critical:(7x24) 4-hour Onsite Service-VN,PH,BN
	1	Bezel PowerEdge 2U Standard Bezel (EMC)
	1	Rack Rails ReadyRails™ Sliding Rails With Cable Management rm
	1	Internal Optical Drive DVD+/-RW,SATA,Int
	1	Group Manager Group Manager, Enabled
	1	Password iDRAC,Legacy Password
	1	Quick Sync 2 (at – the – bxmgmt) with mobile features



6	1	Firewall
		<p>Interfaces and Modules 10 GE SFP+ Slots (2)            GE RJ45 Interfaces (8)            GE SFP Slots (8)            GE RJ45 Management Ports (2)            USB Ports 2 RJ45 Console Port(1)            Local Storage NIL 2x 240 GB SSD            Included Transceivers 2x SFP (SX 1 GE)            System Performance and Capacity            IPv4 Firewall Throughput (1518 / 512 / 64 byte, UDP)            36 / 36 / 22 Gbps,            IPv6 Firewall Throughput (1518 / 512 / 64 byte, UDP)            36 / 36 / 22 Gbps            Firewall Latency (64 byte, UDP) 2 μs            Firewall Throughput (Packet per Second) 33 Mpps            Concurrent Sessions (TCP) 8 Million            New Sessions/Second (TCP) 300,000            Firewall Policies 10,000            IPsec VPN Throughput (512 byte) 1 20 Gbps            Gateway-to-Gateway IPsec VPN Tunnels 2,000            Client-to-Gateway IPsec VPN Tunnels 50,000            SSL-VPN Throughput 5 Gbps            Concurrent SSL-VPN Users (Recommended Maximum, Tunnel Mode)            500            SSL Inspection Throughput (IPS, avg HTTPS) 3            5.7 Gbps            Application Control Throughput (HTTP 64K) 2            14 Gbps            CAPWAP Throughput (1444 byte, UDP) 18 Gbps            Virtual Domains (Default / Maximum) 10 / 10            Maximum Number of Switches Supported 48            Maximum Number of FortiAPs (Total / Tunnel)            512 / 256            Maximum Number of FortiTokens 1,000            Maximum Number of Registered Endpoints 2,000            High Availability Configurations Active-Active, Active-Passive, Clustering            System Performance — Optimal Traffic Mix            IPS Throughput            System Performance — Enterprise Traffic Mix            IPS Throughput 2 5.2 Gbps            NGFW Throughput 2, 4 5 Gbps            Threat Protection Throughput 2, 5 4.7 Gbps            Dimensions and Power            Height x Width x Length (inches) 1.75 x 17.0 x 15.0            Height x Width x Length (mm) 44.45 x 432 x 380</p>

		<p>Weight 16.1 lbs (7.3 kg)  Form Factor 1 RU Power Consumption (Average / Maximum) 95 W / 193 W  105 W / 200 W Power Source 100–240V 60–50Hz Current (Maximum)  6A Heat Dissipation 613 BTU/h Redundant Power Supplies (Hot Swappable) optional  Operating Environment and Certifications  Operating Temperature 32–104°F (0–40°C)  Storage Temperature -31–158°F (-35–70°C)  Humidity 10–90% non-condensing  Noise Level 43 dBA Operating Altitude Up to 7,400 ft (2,250 m)  Compliance FCC Part 15 Class A, C-Tick, VCCI, CE, UL/cUL, CB Certifications  ICSA Labs: Firewall, IPsec, IPS, Antivirus, SSL-VPN; USGv6/IPv6</p>
		<p>INCLUDED: TRAINING,INSTALLATION,IMPLEMENTATION  Out of scope:  - Windows/Linux OS upgrade is not part of this scope of work.  - Machine Relocation is not part of this scope of work.  - Services for Proof of Concept or Demo is not part of this scope of work  Implementation Services for electrical and civil works is not part of this scope of Work.  Scope of work  - Installation of Windows Server to Hyper-V nodes  - Windows Update of Windows Servers  - Installation of Hyper-V cluster to nodes  - Configuration of HA and live migration  - P2V Migration of all application except for domain controller and sharepoint.  - Collocation services as DR Site  - Replication of vm’s from HQ to DR Site  Provides Knowledge Transfer/Training of the set-up for the end user and issue a certificate  Provide Administration Manual for end user  Provides Full Stress test of the setup  Connection of any server / operating system currently not supported in EMC’s  Compatibility Matrix</p>

**Duration of the Data Center Co - location:** one year

**Project Cost:** Php 20,082,990.00 inclusive of VAT

**Mode of Payment:** Government Procedure

Project Officer:

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