



BANK OF TANZANIA


**BILL OF MATERIALS FOR TANZANIA INSTANT PAYMENT SYSTEM (TIPS)
ON-PREM INFRASTRUCTURE**

ICT EQUIPMENT (COMPUTE, STORAGE, BACKUP, NETWORK, SECURITY) AND SOFTWARES

**List of the ICT equipment and software for Tanzania Instant Payment System (TIPS)
On-Prem Infrastructure**

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ITEM 1: ENTERPRISE COMPUTE SYSTEM

Enterprise Server	Configuration	Technical Specifications	
	<i>Product Description</i>	HP Blade Center	
	<i>Chassis</i>	HP Blade Systems C7000 Platinum Enclosure : (763850-B21)	
	<i>Management</i>	Redundant Onboard Administrator—LAN and serial access	
		Local KVM connection	
		HP Insight Control	
	<i>Onboard Administrator</i>	2no HP BLc7000 OA Module : (456204-B21)	
	<i>Number of Fans per Enclosure</i>	10 FANS	
	<i>Power connections</i>	6no Single Phase Power Supply Unit (International model power connections)	
	<i>Flex Fabric</i>	2no Cisco HP B22 FEX : (641146-B21) + 4no Transceiver 10Gb SR (455883-B21)	
	<i>FC Fabric Modules</i>	2no HP Brocade 28/16c (C8S46AR) + 4no Transceiver 16Gb SW (QK724A)	
	<i>Cable Management</i>	1no Rack Mounting & Cable Management Kit	
	<i>Blade Server Qty per Enclosure</i>	5	
	<i>HPE ProLiant Server Modules</i>	1no ProLiant BL460c Gen10 Intel Xeon-G 6148 2P Server : (875938-B21)	
	<i>Processors per Server</i>	2no Intel Xeon Platinum 6134 (20C, 2.4GHz, 145W) (875950-L21 + 875950-B21)	
	<i>Memory per Server</i>	8no ProLiant BL460c Gen10 DDR4-2466 ECC [512GB per Blade Server] : (815101-B21)	
	<i>SAS Controller per Server</i>	1no HPE Smart Array P204i-b SR Gen10 (4 Internal Lanes/1GB Cache) 12G SAS Modular Controller (804367-B21)	
	<i>Cache Battery per Server</i>	1no HPE 12W Smart Storage Battery for BladeSystem Server (P01363-B21)	
	<i>Hard Drivers per Server</i>	2no HPE 900GB SAS 12G Enterprise 15K SFF (2.5in) SC 3yr Wty HDD : (870759-B21)	
<i>FC HBA per Server</i>	2no ProLiant QMH2672 16Gb FC Mezz : (710608-B21)		
<i>Ethernet LOM per Server</i>	HPE Ethernet 10Gb 2-port 560FLB Adapter (655639-B21)		
<i>HPE Insight software</i>	HP Insight Control incl1yr 24x7 Technical Support and Updates Electronic License :C6N28AAE,		
<i>HPE Care Pack Services</i>	HPE 3 year 4 hour 24x7 ProLiant BL4xxc Proactive Care Service: U3B14E		
<i>HPE iLO Advanced License</i>	HPE iLO Advanced Blade Electronic License with 1 yr Tech Support and Updates BD505A		
<i>Warranty</i>	3 (three) years		
<i>Quantity</i>	3	 Compute%20Blade %20(no%20chassis).l	

ITEM 2: CORPORATE STORAGE SYSTEM

CORPORATE STORAGE SYSTEM	Configuration	Technical Specifications
	<i>Product</i>	HP 3PAR StoreServ 8440 16Gb
	<i>Model</i>	HP 3PAR StoreServ 8440 16Gb Virtualization Base System SAN Kit (QR510A)
	<i>Host Adapter</i>	HPE 3PAR StoreServ 8440 2N 4-port 16Gb/sec Storage Base with two host adapters, 24 drives
	<i>Number of Drive Enclosures</i>	One (1) HPE 3PAR StoreServ 8000 SFF(2.5in) 2U SAS Drive Enclosure (H6Z26A)
	<i>Drives Types I</i>	HPE 3PAR 8000 920GB SAS SFF (2.5in) SSD : (R0P66A)
	<i>Number of Drives</i>	24
	<i>Service Processor Implementation</i>	HPE 3PAR 8000 StoreServ SPS Service Processor : (Q2S14A)
	<i>Cables FC and 10GbE</i>	(20) HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable (QK734A)
		(10) HP 15.2m/50ft CAT5 RJ45 M/M Ethernet Cable (C7542A)
		(10) HPE 4.3m/14ft CAT5 RJ45 M/M Ethernet Cable (C7536A)
	<i>HP Intelligent Series Racks</i>	2 x Power Distribution Units and Cables
	<i>HP 3PAR 8000 Operating System Software Suite</i>	HP 3PAR 8440 Operating System Software Suite Base E-LTU
	<i>HP 3PAR 8000 Security Software Suite</i>	HP 3PAR 8440 Security Software Suite Base E-LTU
	<i>HP 3PAR 8000 Reporting Software Suite</i>	HP 3PAR 8440 Reporting Software Suite E-LTU
<i>Warranty Category</i>	3/3/3 Years	
<i>Quantity</i>	3	

ITEM 3: BACKUP SOLUTION

BACKUP SOLUTION	Configuration	Technical specifications	
	<i>Product Description</i>	HPE ProLiant DL380 Gen10 12LFF Configure-to-order Server (868705-B21)	
	<i>Processor Name</i>	HPE DL380 Gen10 Intel Xeon-Silver 4110 (2.1GHz/8-core/85W) FIO Processor Kit (826846-L21)	
	<i>Number of Processor</i>	1	
	<i>Memory</i>	4 x RAM Upgrade kit - HPE Registered DIMMs 32GB ECC DDR4-2666 SmartMemory : (815100-B21)	
	<i>Disk Controller</i>	1no HPE Smart Array E208i-a SR Gen10 (8 Lanes/No Cache) 12G SAS Modular Controller (804326-B21)	
	<i>Hard Disk Capacity</i>	12no HPE 10TB SATA 6G Midline 7.2K LFF (3.5in) SC 1yr Wty Helium 512e HDD (857648-B21)	
	<i>Solid State Capacity</i>	2no HPE 480GB SATA 6G Mixed Use M.2 2280 3yr Wty SSD : 875490-B21	
	<i>Solid State Boot Volume</i>	1no HPE 32GB MicroSD Card Class10 HC-I (700139-B21)	
	<i>HPE LOM Module</i>	1no HPE Ethernet 10Gb 2-port 562FLR-SFP+ Adapter (727054-B21)	
	<i>SFP+ Modules</i>	2 x 10Gb SR SFP+ module : (455883-B21)	
	<i>LAN Card</i>	4x 1Gb LAN on motherboard	
	<i>Power Supply</i>	Dual hot-plug power supply 220-240 Volts, 50Hz (865408-B21)	
	<i>Form Factor</i>	2U Rack mountable, with easy mounting kit and management arm (733664-B21) + (733662-B21)	
	<i>Management software</i>	HPE iLO Advanced with Intelligent Provisioning (embedded) (512485-B21)	
<i>Warranty</i>	3 (three) years		
<i>Quantity</i>	5	 Backup Solution (FreeNAS).hpc	

ITEM 4: Nexus switch

Nexus switch	Configuration	Technical Specifications
	<i>Product Description</i>	Cisco Nexus Switch
	<i>Model</i>	Cisco Nexus 56128P
	<i>Fixed Ports</i>	48 x 1 Gigabit / 10 Gigabit SFP+ + 4 x 40Gb Ethernet / FCoE QSFP+
	<i>Number of ports</i>	1152 with FEX
	<i>Expansion slots</i>	2 Generic Expansion Module (GEM)
	<i>Hardware VXLAN</i>	Yes
	<i>Capacity</i>	ARP entries: 256000 Virtual interfaces (VLANs): 4096 ACL entries: 4000 Multiple Spanning Tree Protocol instances: 64 Host table entries (IPv4): 32000 Host table entries (IPv6): 8000 Multicast entries (IPv4): 8000 IGMP snooping entries: 8000 Virtual Routing and Forwarding (VRF) entries: 4000 Equal-Cost Multipathing (ECMP) ways: 64
	<i>MAC Address Table Size</i>	256K entries
	<i>Forwarding Performance</i>	Value 2.56 Tbps
	<i>Compliant standards</i>	Compliant Standards FIP v1, IEEE 802.1D, IEEE 802.1Q, IEEE 802.1Qaz, IEEE 802.1Qbb, IEEE 802.1p, IEEE 802.1s, IEEE 802.1w, IEEE 802.3, IEEE 802.3ad (LACP), IEEE 802.3ae, IEEE 802.3x
	<i>Routing protocol</i>	IS-IS, RIP-2, BGP, EIGRP, HSRP, IGMP, VRRP, OSPFv2, PIM-SM, EIGRP for IPv6, OSPF for IPv6, static IPv4 routing, static IPv6 routing, ECMP, policy-based routing (PBR), Bidirectional Forwarding Detection (BFD), BGP for IPv6
	<i>Fans</i>	4 fans Port Side Exhaust
	<i>Power supply</i>	1+1 redundancy , AC 240V
	<i>Operating System</i>	NX OS
	<i>Other License</i>	LAN_BASE_SERVICES_PKG required. FCOE_NPV_PKG is NOT required.
	<i>Form Factor</i>	2 Rack units
<i>Rack Mounting kit</i>	Yes	
<i>Warranty</i>	1 years	
<i>Quantity</i>	6	

ITEM 5: Catalyst 9200 switch

Catalyst 9200 switch	Configuration	Technical Specifications
	<i>Product Description</i>	Cisco Catalyst switch
	<i>Model</i>	C-9200-48T
	<i>Fixed Ports</i>	48 ports of 1 G
	<i>Uplink Ports</i>	Modular slot for 10G module
	<i>Media types</i>	
	<i>Management</i>	Cisco MDS 9000 Family CLI, Cisco DCNM, Quick Configuration Wizard, HPE StoreFabric DCNM License (optional), and HPE MDS 9100 Enterprise Package license (optional)
	<i>Upgradeability</i>	
	<i>Models</i>	48-port mode
	<i>software</i>	
	<i>Fans:</i>	Dual FRU
	<i>Form factor</i>	1U
	<i>Power supply</i>	Power Supply: 1+1 redundancy , AC 240V
	<i>Warranty and included service</i>	(1-1-1) hardware warranty—one-year on-site warranty, normal business hours, next-business-day response
<i>Quantity</i>	6	

ITEM 6: 10G Network Module

10G	Configuration	Technical Specifications
	<i>Product</i>	4-Port 10Gb Network Module
	<i>Model</i>	C9200-NM-4X
	<i>Networking Protocol</i>	10 Gigabit Ethernet
	<i>Number of ports</i>	4
	<i>Warranty Category</i>	1 Year
	<i>Quantity</i>	6

ITEM 7: Power Supply Unit

Power Supply Unit	Configuration	Technical Specifications
	<i>Product</i>	Cisco Power supply unit
	<i>Model</i>	PWR-C1-350WAC/2
	<i>Input voltage</i>	100 to 240 VAC (autoranging), 50 to 60 Hz
	<i>Maximum Output Power</i>	350 W
	<i>Input current</i>	Input current 4–2 A
	<i>Output ratings</i>	Output ratings –56 V@6.25 A
	<i>Warranty</i>	1 Year
	<i>Quantity</i>	6

ITEM 8: UTP Cable

UTP Cable	Configuration	Technical Specifications
	<i>Product</i>	UTP category 6 cable
	<i>Model</i>	Dintek PowerMax 500
	<i>Material</i>	Bare copper
	<i>Compliance</i>	TIA/EIA 568B.2-1, ISO/IEC 11801, EN 50173
	<i>Transmission quality</i>	Transmission quality: verified up to 250MHz
	<i>Wire size</i>	23AWG
	<i>Conductor resistance</i>	Conductor Resistance Max. 7.32 Ω/100m at 20°C
	<i>Impedance</i>	Impedance 1~100MHz 100Ω ± 15%
		Impedance 100-250MHz 100Ω ± 22%
	<i>Length</i>	305m roll in a box
	<i>Jacket color</i>	10 rolls Grey, 10 rolls blue, 10 rolls green
<i>Quantity</i>	30	

ITEM 9: Datacenter Rack

Datacenter Rack	Configuration	Technical Specifications
	<i>Product</i>	Datacenter rack cabinet,
	<i>Type</i>	42U free standing 1M Deep
	<i>Rack unit width</i>	19 inch standard
	<i>Holes</i>	Universal square holes, cage nuts included
		Leveling stands and castor supports
	<i>Doors</i>	Removable side, front and rear doors Perforated, full, front locking door Perforated, split, rear locking doors
	<i>Cable management</i>	Rear, vertical cable management
	<i>locking</i>	Lockable with Keys included
	<i>Quantity</i>	6

ITEM 10: SPF+ for 40KM Range Up-Stream

SPF+	Configuration	Technical Specifications
	<i>Product</i>	Cisco 10G Transceiver module
	<i>Model</i>	SFP-10G-BX40U-I
	<i>Quantity</i>	5

ITEM 11: SPF+ for 40KM Range Down-Stream

SPF+	Configuration	Technical Specifications
	<i>Product</i>	Cisco 10G Transceiver module
	<i>Model</i>	SFP-10G-BX40D-I
	<i>Quantity</i>	5

ITEM 12: Attenuator

SPF+	Configuration	Technical Specifications
	<i>Product</i>	Attenuator
	<i>Model</i>	15216-ATT-LC-7=
	<i>Quantity</i>	9

ITEM 13: SPF+ for 10KM Range UP-Stream

SPF+	Configuration	Technical Specifications
	<i>Product</i>	Cisco 10G Transceiver module
	<i>Model</i>	SFP-10G-BX10U-I
	<i>Quantity</i>	3

ITEM 14: SPF+ for 10KM Range Down-Stream

SPF+	Configuration	Technical Specifications
	<i>Product</i>	Cisco 10G Transceiver module
	<i>Model</i>	SFP-10G-BX10D-I
	<i>Quantity</i>	3

ITEM 15: Firewall

Firewall	Configuration	Technical Specifications
	<i>Product Description</i>	Cisco Firepower 2130
	<i>Model</i>	Cisco Firepower 2130 NGFW Appliance
	<i>Fixed Ports</i>	12 x 10M/100M/1GBASE-T Ethernet interfaces (RJ-45), 4 x 10 Gigabit (SFP+) Ethernet interfaces
	<i>Expansion port</i>	1 NM slot
	<i>Throughput: FW + AVC</i>	4.75 Gbps
	<i>Throughput: AVC + IPS</i>	4.75 Gbps
	<i>Security contexts (included; maximum)</i>	2; 30
	<i>Maximum VPN Peers</i>	7500
	<i>Maximum new connections per second, with AVC</i>	24,000
	<i>Maximum concurrent sessions, with AVC</i>	2 million
	<i>Maximum number of VLANs</i>	750
	<i>Integrated Management port</i>	1 x 10M/100M/1GBASE-T Ethernet port (RJ-45)
	<i>Serial port</i>	1 x RJ-45 console
	<i>USB</i>	1 x USB 2.0 Type-A (500mA)
	<i>Storage</i>	1x 200 GB, 1x spare slot (for MSP)
	<i>Fans</i>	4 fans
	<i>Power supply</i>	1+1 redundancy , AC 100-240V
	<i>Operating System</i>	FTD Image
	<i>Other License</i>	L-FPR2130T-TM-1Y - Threat Defense & Malware
<i>Form Factor</i>	1 Rack unit	
<i>Rack Mounting kit</i>	Yes	
<i>Warranty</i>	1 years	
<i>Quantity</i>	6	

ITEM 16: SPF+ SR

SPF+	Configuration	Technical Specifications
	<i>Product</i>	Cisco 10G Transceiver module
	<i>Model</i>	Cisco SFP-10G-SR
	<i>Interface</i>	LC duplex
	<i>Cable type</i>	Cable Type MMF
	<i>TX Power</i>	-7.3~-1dBm
	<i>Quantity</i>	120

ITEM 17: REMOTE POWER CONTROL

	Configuration	Technical Specifications
	Product	Eaton Remote Power Control
	Model	ESWH28
	Other	Horizontal Cable Management
	Warranty Category	1 Year
	Quantity	6

ITEM 17: OUT OF BAND (OOB) ACCESS

	Configuration	Technical Specifications
	Product	Raritan
	Model	DSX2-16M
	Warranty Category	1 Year
	Quantity	6