

SERVER AND STORAGE UPGRADE

ITEM	QTY	UNIT COST	TOTAL
BLADE SERVER SYSTEM	1		
BLADE SYSTEM	1	₱3,934,000.00	₱3,934,000.00
BLADE SYSTEM	4		
SAN STORAGE	1	₱1,500,000.00	₱1,500,000.0
PC SERVER	1	₱206,500.00	₱206,500.00
GRAND TOTAL			₱5,640,500.00

ICT EQUIPMENT		QTY
BLADE SERVER SYSTEM		1 Lot
Compatibility	Blade Chassis System must be compatible with existing Blade Chassis of the OSG (IBM Blade Server E) including its existing Storage Area Network (DS 3400 and Dell VNXe System). New and existing SAN should be seen by the New Blade Chassis System.	
CHASSIS		1 Unit
Form Factor	Blade with 10U chassis that can accommodate up to 14x half-width horizontal nodes. Supports mixing 2P, 4P and 8P nodes on the same chassis	
Midplane	Must have passive midplane	
Management Module	Blade Chassis should have 2x redundant management module	
Network Switch	Blade Chassis should have 2x network switch that includes 14 internal 10 GbE ports enabled (one to each compute node) and 10 external 10 GbE ports enabled with options to upgrade (per Switch). With 10x initially activated ports with 10x 10Gb base-T SFP+ Transceivers and 10x 1GbE Transceivers. Standard with Flexible Port Mapping capability.	
SAN Switch	Blade Chassis should have 2x SAN switch that includes 28 internal full duplex 16/8Gb FC ports (per Switch). 24 external ports for 16 Gb or 8 Gb SFP+ transceivers supporting 4 Gb, 8 Gb, and 16 Gb port speeds (per Switch). With 12x initially activated external ports per switch with 12x 16Gb and 12x 8Gb FC Transceivers.	
Fans and Cooling	Blade Chassis should have 10x redundant Fans. Should be capable of Zoned Adaptive Cooling with fans can be independently slowed or sped up.	
Power Supply	Blade Chassis should have 6x redundant 2500W PSU	
Power Consumption	Must be 12,900 watts maximum	
Power Cable	Blade Chassis should have 6x 2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power Cable	
Warranty	3 Years Parts, Labour, On Site, 4Hr Response Time, 24x7	
Implementation Services	Installation and configuration must be included	
ICT EQUIPMENT		QTY
BLADE SERVER NODE		4 Units

Form Factor	Half-width
Processor	2x Xeon Silver 4114 10C 85W 2.2GHz Processor
Memory	8x 16GB DDR4 2666 MHz. up to 24 DIMMs can be installed
Storage	2x 2.5" 300GB 10K SAS 12Gb Hot Swap 512n HDD
Connectivity	4-port 10Gb Virtual Fabric Adapter and 16Gb 2-Port Fibre Channel Adapter
Features	With predictive failure analysis which covers processors, memory, and drives, plus the fans and power supplies.
Warranty	3 Years Parts, Labour, On Site, 4Hr Response Time, 24x7
Implementation Services	Installation and configuration must be included
HGT EQUIPMENT	
STORAGE AREA NETWORK	
	1 Unit
Form Factor	2U Rackmount SAN
Controller memory	16 GB per system (8 GB per controller module)
Controller	Dual Redundant Converged Network Controller
RAID Levels	RAID 1, 5, 6, and 10
Storage	3x 400GB SSD and 15x 1.2TB HDD
Ports	4x SFP/SFP+ host ports with two built-in dual-port CNCs (each port on the same CNC must have the same connectivity type; different CNCs might have different connectivity types) and 1x 1GbE ports for management per Controller.
Transceivers	8x 16GB FC SFP+ Transceivers
Features	SSD Tiering
Performance	Dual controller configuration Up to 250000 random disk read IOPS Up to 7 GBps sequential disk read throughput Up to 6 GBps sequential disk write throughput
Cooling	Redundant cooling with two fans built into power and cooling modules (PCMs).
Power supply	Two redundant hot-swap 580 W AC power supplies built into PCMs.
Management interfaces	1 GbE port (UTP, RJ-45) and serial port (Mini-USB) on the controller modules. Web-based interface (WBI); Telnet, SSH, or Direct Connect USB CLI; SNMP and email notifications.
Cables	2x 4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable and 8x 5m LC-LC OM3 MMF Cable
Warranty	3Yr 24x7 4Hr Response + Drive Retention
Implementation Services	Installation and configuration must be included
Misc	
FC HBA	1x Dual port 8Gb FC HBA for x3550 M5 (5463)
NIC	1x Dual port 10GbBase-T NIC for x3550 M5 (5463)
Implementation Services	Installation and configuration must be included
Scope of Work	
Blade Chassis	
	Unboxing and initial setup
	Racking
	Assembly of Power Supply and Cooling Fans
	Initial Configuration of Chassis Management Module (CMM)

	Initial Configuration of Flex Network Switch
	Initial Configuration of Flex SAN Switch with SAN Zoning
	Installation of Server Nodes
	Knowledge Transfer
Server Nodes	
	Configuraiton of Server Nodes
	RAID Configuration
	OS Installation (Windows Only)
	Knowledge Transfer
Storage	
	Unboxing and initial setup
	Racking
	Create Storage Pool
	Create Host
	Mount volumes to Host
	Testing
	Knowledge Transfer
Existing x3550 M5	
	Removal of 2x Single port FC HBA
	Installation of 1x Dual port FC HBA
	Installation of 1x Dual port 10GbBase-T NIC
ICT EQUIPMENT	
PC SERVER	1 Unit
Case Type	Full Tower
M/B Compatibility	E-ATX (12" x 13"), ATX, Micro-ATX, Mini-ITX
Expansion Slots	PCI-E x 8
Maximum Compatibility	VGA Card Length: 370mm
Front Ports	At least 2x USB 3.0
Power Supply Compatibility	PSII: ATX12V and EPS12V - Length up to 230mm
MOTHERBOARD	
1 Unit	
Chipset	Intel B250
CPU SUPPORT	7th & 6th Gen Intel LGA 1151 Processor
MEMORY	Support Dual Channel DDR4 2400/ 2133/ 1866 MHz
	2 x DDR4 DIMM Memory Slot
	Max. Supports up to 32GB Memory
EXPANSION SLOT	1 x PCI-E 3.0 x16 Slot
	11 x PCI-E 3.0 x1 Slot
STORAGE	6 x SATA3 Connector
USB	4 x USB 3.0 Port
	1 x USB 3.0 Header
	2 x USB 2.0 Port
	2 x USB 2.0 Port (only 5V power, up to 1.5A)
	2 x USB 2.0 Header
LAN	Realtek RTL8111H - 10/100/1000 Controller

	Support Super LAN Surge Protection	
CODEC	Realtek ALC887 8-Channel HD Audio	
	Support HD Audio	
REAR I/O	1 x PS/2 Mouse	
	1 x PS/2 Keyboard	
	4 x USB 3.0 Port	
	2 x USB 2.0 Port	
	2 x USB 2.0 Port (only 5V power, up to 1.5A)	
	1 x DVI-D Connector, resolution up to 1920 x 1200 @60Hz	
	1 x RJ-45 Port	
	3 x Audio Connector	
INTERNAL I/O	1 x USB 3.0 Header	
	2 x USB 2.0 Header	
	6 x SATA3 6Gb/s Connector	
	1 x SATA Power Connector (for rear USB power enhancement)	
	1 x Front Audio Header	
	1 x Front Panel Header	
	1 x CPU Fan Header	
	2 x System Fan Header	
	1 x Serial Header	
	2 x PCI-E 12V 4Pin Connector	
DIMENSION	ATX Form Factor Dimension: 29.5cm x 21cm (W x L)	
OS SUPPORT	Supports Windows 10(x64) for Intel 7th Generation Processor	
FEATURES	Supports 100% Solid capacitor	
	Supports Charger Booster	
	Supports BIOS Online Update	
CPU SPECIFICATIONS (I5-7600K)		1 unit
Performance	# of Cores 4	
	# of Threads 4	
	Processor Base Frequency 3.80 GHz	
	Max Turbo Frequency 4.20 GHz	
	Cache 6 MB SmartCache	
	Bus Speed 8 GT/s DMI3	
	# of QPI Links 0	
	TDP 91 W	
Memory Specifications	Max Memory Size (dependent on memory type) 64 GB	
	Memory Types DDR4-2133/2400, DDR3L-1333/1600 @ 1.35V	
	Max # of Memory Channels 2	
	ECC Memory Supported ‡ No	
Processor Graphics	Processor Graphics ‡ Intel® HD Graphics 630	
	Graphics Base Frequency 350 MHz	
	Graphics Max Dynamic Frequency 1.15 GHz	
	Graphics Video Max Memory 64 GB	

	4K Support Yes, at 60Hz
	Max Resolution (HDMI 1.4) ‡ 4096x2304@24Hz
	Max Resolution (DP) ‡ 4096x2304@60Hz
	Max Resolution (eDP - Integrated Flat Panel) ‡ 4096x2304@60Hz
	DirectX* Support 12
	OpenGL* Support 4.4
	Intel® Quick Sync Video Yes
	Intel® InTru™ 3D Technology Yes
	Intel® Clear Video HD Technology Yes
	Intel® Clear Video Technology Yes
	# of Displays Supported ‡ 3
	Device ID 0x5912
Expansion Options	Scalability 1S Only
	PCI Express Revision 3.0
	PCI Express Configurations ‡ Up to 1x16, 2x8, 1x8+2x4
	Max # of PCI Express Lanes 16
Package Specifications	Sockets Supported FCLGA1151
	Max CPU Configuration 1
	Thermal Solution Specification PCG 2015C (65W)
	TJUNCTION 100°C
	Package Size 37.5mm x 37.5mm
	Low Halogen Options Available See MDDS
Advanced Technologies	Intel® Optane™ Memory Supported ‡ Yes
	Intel® Turbo Boost Technology ‡ 2.0
	Intel® vPro™ Technology ‡ No
	Intel® Hyper-Threading Technology ‡ No
	Intel® Virtualization Technology (VT-x) ‡ Yes
	Intel® Virtualization Technology for Directed I/O (VT-d) ‡ Yes
	Intel® VT-x with Extended Page Tables (EPT) ‡ Yes
	Intel® TSX-NI Yes
	Intel® 64 ‡ Yes
	Instruction Set 64-bit
	Instruction Set Extensions Intel® SSE4.1, Intel® SSE4.2, Intel® AVX2
	Idle States Yes
	Enhanced Intel SpeedStep® Technology Yes
	Thermal Monitoring Technologies Yes
	Intel® Identity Protection Technology ‡ Yes
	Intel® Stable Image Platform Program (SIPP) No
Security & Reliability	Intel® AES New Instructions Yes
	Secure Key Yes
	Intel® Software Guard Extensions (Intel® SGX) Yes
	Intel® Memory Protection Extensions (Intel® MPX) Yes
	Intel® OS Guard Yes
	Execute Disable Bit ‡ Yes
	Intel® Boot Guard Yes

RAM SPECIFICATIONS	8GB DDR4 Compatible w/ mother board & cpu	
6X USB 3.0 PCI-E EXPRESS 1X TO 16X EXTENDER RISER CARD ADAPTER POWER CABLE		6 Units
Power Connector	Sata 15 PIN POWER / 6 PIN POWER CABLE / MOLEX 4 PIN	
The board size	130mm * 50mm	
USB Cable Length	600mm	
Compatible use	With any graphics cards	
SSD SPECIFICATIONS		1 unit
Capacity	At least 120GB	
Form Factor	2.5"	
NAND Flash	3D NAND	
Dimensions (L x W x H)	100.45 x 69.85 x 7mm	
Weight	47.5g	
Interface	SATA 6Gb/s	
Sequential R/W performance (max)	Up to 520 / 450MB/s	
Shock resistance	1500G / 0.5ms	
MTBF	2,000,000 hours	
6x GPU SPECIFICATIONS (RX 580)		6 Units
Compute Units	36	
Base Frequency	Up to 1257 MHz	
Boost Frequency	Up to 1340 MHz	
Peak Pixel Fill-Rate	Up to 42.88 GP/s	
Peak Texture Fill-Rate	Up to 192.96 GT/s	
Max Performance	Up to 6.2 TFLOPs	
ROPs	32	
Stream Processors	2304	
Texture Units	144	
Transistor Count	5.7 B	
Memory Speed (Effective)	8 Gbps	
Max Memory Size	8 GB	
Memory Type (GPU)	GDDR5	
Memory Interface	256-bit	
Max. Memory Bandwidth	256 GB/s	
Features	Crossfire Technology	
	Vulkan API	
2x PSU SPECIFICATIONS		2 Units
Wattage	1200 Watts	
Form Factor	ATX 12 V	
Features	Full Modular	
	80 PLUS Platinum Certified	
	Multi-GPU setup	