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SPECIFICATION FOR SUPPLY AND REPAIR OF ICT HARDWARE AND ACCESSORIES	DATE:	MARCH 2024
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## **FOREWORD**

This Request for Standard Services was prepared by the following Work Group member/s:

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## **1. INTRODUCTION**

City Power has invested in 99% of HP and Huawei desktops and laptops that are used across the business. On the network infrastructure, Cisco, HP & DELL Brocade and Huawei switches are widely implemented across the ICT network. The server and storage infrastructure is currently running on DELL & HP equipment with VMware virtualization as well as on SUN Oracle equipment.

City Power requires services from accredited service providers and suppliers for the supply, repair, and delivery of ICT hardware (desktops, laptops, VxRail and networking equipment) for the duration of the contract.

## **2. SCOPE OF WORK**

The scope of work entails supply, repair and delivery of Information and Communication Technology (ICT) hardware and accessories. The list of Hardware shall not be limited to the items listed below and additional items shall be requested based on the future business needs and technological advancements.

The Service provider shall be responsible for the repair and the replacement of the supplied hardware as and when required. The Service provider shall manage the warranties of the supplied hardware by acting as single point of contact between City Power and the hardware vendor/s.

## **3. NORMATIVE REFERENCES**

The following documents contain provisions that, through reference in the text, constitute requirements of this specification. At the time of publication, the editions indicated were valid. All standards and specifications are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the documents listed below.

<b>Document number</b>	<b>Document title</b>
IEEE 802.3z	standard for Gigabit Ethernet over optical fibre and shielded twisted pair (STP)
ANSI/IEEE 162-1963	IEEE Standard Definitions of Terms for Electronic Digital Computers
IEEE/AIEE 34-1922	AIEE Standards for Telephony and Telegraphy
IEEE 1680-2009	(IEEE Standard for Environmental Assessment of Electronic Products (Revision of IEEE: 1680-2006)
IEEE 487.3-2014	IEEE Standard for the Electrical Protection of Communication Facilities Serving Electric Supply Locations Through the Use of Hybrid Facilities
IEEE 802.3-2015	IEEE Standard for Ethernet - (Revision of IEEE:802.3-2012)
IEEE 802-2014	IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture (Revision to IEEE: 802-2001)

Document number	Document title
802.11n and 802.11ac networks, Wireless - IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMMI802.11e, 802.11h, 802.11k, 802.11n, 802.11r, 802.11u, 802.11w, 802.11ac	a set of media access control (MAC) and physical layer (PHY) specifications for implementing wireless local area network (WLAN)
WEP / WPA / WPA2-PSK.	Wireless Security protocols
IEEE-1394	an interface standard for a serial bus for high-speed communications and isochronous real-time data transfer

#### 4. TERMS AND ABBREVIATIONS

Term	Meaning
i5 and i7	A family of dual and quad core, 64-bit, x86 CPUs from Intel
1 GB RAM	Roughly* 1 Billion of Bytes of random access memory
SATA	Serial Advanced Technology Attachment," or "Serial ATA." It is an interface used to connect ATA hard drives
MB	The megabyte is a multiple of the unit byte for digital information
WXGA	A display class that's appropriate for business and also supports watching digital videos (DVD)
Windows 7, 8, 10, 11	Computer operating systems

## **5. HARDWARE AND ACCESSORIES**

- 5.1 Desktop Platforms: (All desktop platforms shall have the following as a **standard**)
- 5.1.1 USB, serial, HDMI, Parallel and VGA Ports
  - 5.1.2 Network interface card (100 — 1000MB per second)
  - 5.1.3 Sound card
  - 5.1.4 USB cordless optical mouse
  - 5.1.5 USB cordless keyboard
  - 5.1.6 Desktop and Monitor Cable lock
  - 5.1.7 Preloaded with a preconfigured City Power image
  - 5.1.8 Built in Wi-Fi
  - 5.1.9 23" inch LCD monitor
  - 5.1.10 4 Year Parts and Labor Limited Warranty, *plus* Accidental Damage Protection (ADP, sometimes called Complete Care)
- 5.2 Standard Full-tower (i5)
- 5.2.1 Intel based processor.
  - 5.2.2 16GB RAM
  - 5.2.3 500 GB SSD hard drive
  - 5.2.4 Black chassis
  - 5.2.5 2 x HDMI ports
  - 5.2.6 2 x USB 3 ports
  - 5.2.7 Peripheral component interconnects (PCI) Slot (Minimum of one)
  - 5.2.8 SATA Digital Versatile Disk Rewritable (DVD-RW)
  - 5.2.9 Graphics card (Minimum of 512MB)
  - 5.2.10 USB cordless optical mouse
  - 5.2.11 USB cordless keyboard
  - 5.2.12 23" inch LCD monitor
  - 5.2.13 4 Year Parts and Labor Limited Warranty, *plus* Accidental Damage Protection (ADP, sometimes called Complete Care)
- 5.3 High Spec Full-tower (i7)
- 5.3.1 Intel based processor.
  - 5.3.2 Minimum of 16GB RAM
  - 5.3.3 500 GB SSD hard drive
  - 5.3.4 Black chassis
  - 5.3.5 PCI Slot (Minimum of one)
  - 5.3.6 Peripheral component interconnects (PCI) Slot (Minimum of one)
  - 5.3.7 2 x HDMI ports
  - 5.3.8 2 x USB 3 ports
  - 5.3.9 USB cordless optical mouse
  - 5.3.10 USB cordless keyboard
  - 5.3.11 23" inch LCD monitor
  - 5.3.12 Graphics card (Minimum of 1024MB)
  - 5.3.13 4 Year Parts and Labor Limited Warranty, *plus* Accidental Damage Protection (ADP, sometimes called Complete Care)

#### **5.4 Specialized Work stations**

- 5.4.1 Grade: Workstation Grade i9 Processor
- 5.4.2 RAM: 32 GB
- 5.4.3 500 GB SSD hard drive
- 5.4.4 Processor speed: 3.0 GHZ each processor
- 5.4.5 2 x HDMI ports
- 5.4.6 2 x USB 3 ports
- 5.4.7 USB cordless optical mouse
- 5.4.8 USB cordless keyboard
- 5.4.9 Interfaces: 1 GB dual Ethernet ports Should support LAN teaming or Bonding
- 5.4.10 User interface: Three/Two(as per BOQ) 24" wide screen (16:9 aspect ratio), HD Resolution (1920x1080) TFT Colour monitors, keyboard & optical Bluetooth mouse
- 5.4.11 Mounting Desktop mounting
- 5.4.12 Quad port Graphics Card: 4 GB, supports OpenGL 4 or higher. Supports 4 displays
- 5.4.13 Operating system: Windows11 Enterprise
- 5.4.14 **4 Year Parts and Labor Limited Warranty**, *plus* Accidental Damage Protection (ADP, sometimes called Complete Care)

#### **5.5 All in one Desktop (i7)**

- 5.5.1 Base Unit EliteOne 800 G6 24 AiO BU -Non-Touch IDS Minimum of 16GB RAM
- 5.5.2 TCO Compliance Electronic TCO EdgeCertified labeling Black chassis
- 5.5.3 Processor Intel Core i7 10700 8C 65W CPU 2 x HDMI ports
- 5.5.4 Operating System Windows 11 Enterprise 64bit
- 5.5.5 Operating System Image OptimizationCorporate-Ready Image
- 5.5.6 Camera Integrated SMP Webcam
- 5.5.7 System Memory 16GB (1x16GB) DDR42666 SODIMM Memory
- 5.5.8 NVMe TLC Solid State Drive SOOGB
- 5.5.9 Cordless USB 320K Keyboard SA
- 5.5.10 Cordless Mouse USB Optical
- 5.5.11 NetworkingIntel Wi-Fi 6 AX201 ax 2x2 vPro+Bluetooth 5.1 WW
- 5.5.12 Fingerprint Reader, Fingerprint Sensor
- 5.5.13 AudioAiO AiO Internal Stereo (5W)Speakers
- 5.5.14 Packaging OptionsSingle Unit (All-in-One)Adjustable Height Stand Packaging
- 5.5.15 Microsoft Teams Ready
- 5.5.16 WLAN AX201 ax 2x2 vPro Label
- 5.5.17 DVDRW HP USB External DVDRW Drive
- 5.5.18 Year Parts and Labor Limited Warranty, *plus* Accidental Damage Protection (ADP, sometimes called Complete Care)

**5.6 Desktop Monitor 24 inch Widescreen**

- 5.6.1 24-inch Widescreen with an aspect ratio width of 16 units and height of 9 (16:9).
- 5.6.2 Resolution; (16000 “ 9) Pixel pitch of 0.27d8 millimeters (mm).
- 5.6.3 Brightness: 250 nits or one candelas per square meter (cd/m’).
- 5.6.4 Contrast ratio: (1000:1) static and (3000000:1) dynamic,
- 5.6.5 View angle: 170° horizontal; 160° vertical
- 5.6.6 Response time: 5 milliseconds (ms) on/off,
- 5.6.7 Tilt and swivel angle: Tilt: Tilt: -5 to +25°Anti-glare
- 5.6.8 User programmable with On-screen controls and language selection.
- 5.6.9 Light emitting diode (LED) Backlights,
- 5.6.10** input connector: 1 VGA; 1 Digital visual interface (DVI) with High definition copy protocol (HDCP) support,
- 5.6.11** Power: Input voltage range of 100 —240 VAC),
- 5.6.12** Operating condition; temperature range: (5 to 35°C) degrees Celsius and
- 5.6.13 humidity range (20 to 80% RH.) of 20% relative humidity (RH).
- 5.6.14** Operating time 24/7/365

**5.7 Desktop Monitor 27 inch**

- 5.7.1 Diagonal viewing size: 68.6cm, 27 inch
- 5.7.2 Aspect ratio (16:9)
- 5.7.3 Contrast ratio: (1000:1), 8 million: 1 (dynamic)
- 5.7.4 Brightness: 300cd/m2
- 5.7.5 Response time: 6ms (gray to gray)
- 5.7.6 Tilt and swivel
- 5.7.7 Backlight technology: LED
- 5.7.8 Connector: HDMI (with HDCP), VGA
- 5.7.9 Power: 100 to 240 VAC
- 5.7.10 Operating time 24/7i365
- 5.7.11 Viewing angle: 178-degree horizontal, 178-degree vertical

**5.8 Specialized workstation monitor**

- 5.8.1 Diagonal Viewable size: 24"
- 5.8.2 Color support: 16.7 million
- 5.8.3 On screen control: Required
- 5.8.4 Anti-glare & anti-static: Yes
- 5.8.5 Tilt , Swivel: Yes
- 5.8.6 Aspect ratio: 16:09

**5.9 Desktop Graphics Card**

- 5.9.1 Connectivity for 4 displays simultaneously.
- 5.9.2 1GB, Double data rate, type three synchronous dynamic random-access memory or (SDRAM) with a high bandwidth interface (DDR3),
- 5.9.3 64B, PCI Express multiplied by sixteen and a Maximum vertical refresh rate of 85 heM (Hz),
- 5.9.4 Display support: Integrated four hundred megahertz (MHz) Random Access Digital to analogue converter (RAMDAC),
- 5.9.5 Display max resolution: two thousand five hundred and sixty by one thousand six hundred digital and two thousand and forty-eight by one thousand five hundred and thirty-six analogs.
- 5.9.6 HDMI

**5.10 Mobile Platforms: (All Laptops shall have the following as standard)**

- 5.10.1 USB, HDMI, and VGA Ports
- 5.10.2 Network interface card (100,1000)
- 5.10.3 Sound card
- 5.10.4 Bluetooth mouse
- 5.10.5 Notebook cable lock (compatible with desktop)
- 5.10.6 Notebook case
- 5.10.7 Docking station
- 5.10.8 Preloaded with a preconfigured City Power image.
- 5.10.9 Built in modem.

**5.11 Standard Laptop**

<b>Operating system</b>	Windows 11 Enterprise
<b>Processor</b>	Intel Core i5-1335U Processor (0.9 GHz Efficient-core base frequency, up to Efficient-core 3.4 GHz frequency with Intel Turbo Boost Technology 12 MB cache and 10 cores)
Chipset	Integrated with the processor
Memory	16 GB DDR4-3200 SDRAM (1 x 16 GB)
Storage	512 GB PCIeO NVMe™ SSD
Graphics	Intel Iris Xe Graphics
<b>Audio</b>	(2) Integrated stereo speakers Integrated dual array microphone
<b>Display</b>	39.6 cm (15.6 in) diagonal,
	FHD,
	UWVA,
	eDP,
	antiglare,
	LED, narrow
	bezel,
	bent,
250 nits,	
45% NTSC (1920 x 1080) for HD and IR Camera and WWAN	
<b>Power</b>	65 W USB Type-C™ adapter
Battery type	Long Life 3-cell, 51.3 Wh Polymer
Battery and Power	Long Life 3-cell, 51.3 Wh Polymer
Wireless connectivity	Intel Wi-Fi 6E AX211 (2x2) and Bluetootho 5.3 wireless card (supporting gigabit data rate)
<b>Ports</b>	(1) Thunderbolt 4 with USB4 Type-C port; 40 Gbps signalling rate (USB Power Delivery and DisplayPort 1.4)
	(1) SuperSpeed+ USB 3.2 Gen 2.0 Type-C port; 10 Gbps signalling rate (USB Power Delivery, DisplayPort 1.4)
	(2) SuperSpeed USB 3.2 Gen 1.0 Type-A ports; 5 Gbps signalling rate (one charging port)
	(1) Ethernet (RJ-45) port
	(1) HDMI 2.1 port (cable sold separately)
	(1) Headphone/microphone combo jack
	(1) SmartCard Reader (optional)
	(1) Nano SIM slot for WWAN (optional)
(1) Power input port	



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Webcam	720p HD IR camera
Software	Windows 11 Pro
<b>Weight</b>	1.78 kg
<b>Dimensions</b>	35.94 x 23.39 x 1.99 cm
<b>Warranty</b>	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)
Keyboard	Premium Keyboard — spill-resistant, backlit keyboard with numeric keypad
Security management	Wolf Security of Business
	Fingerprint sensor (select models)
	Sure Click
	Sure Sense
	Sure Run
	Sure Recover
	Sure Start
	Tamper Lock
	Sure Admin
Processor type	Latest generation
Extras	Security Lock
	Laptop Bag
	Portable Docking Station (Type-C connector) with VGA, HDMI, Network and USB

**5.12 Executive High Spec Laptop**

Type	Tablet/Laptop type with stylus and touch screen
Processor	Intels Core <sup>™</sup> i7-1355U (up to 5.0 GHz with Intel <sup>®</sup> Turbo Boost Technology, 12 MB L3 cache, 10 cores, 12 threads)
Chipset	Intels integrated SoC
Memory	16 GB LPDDR4x-4266 MHz RAM (onboard)
Storage	1 TB PCIe Gen4 NVMe <sup>™</sup> TLC M.2 SSD
Graphics	Integrated, Intelo Iriso X <sup>°</sup> Graphics
Audio	Audio by Bang & Olufsen
	Quad speakers
	Audio Boost
Display	34.3 cm (13.5") diagonal
	WUXGA+ (1920 x 1280)
	multitouch-enabled
	IPS
	edge-to-edge glass
	micro-edge
	anti-reflection Corningo Gorillas Glass NBT <sup>™</sup>
	Low Blue Light
	400 nits
	low power
	100% sRGB
<b>Screen-to-body ratio</b>	90.11%
<b>Power</b>	65 W USB Type-CO power adapter
Battery type	4-cell, 66 Wh Li-ion polymer
Battery and Power	Up to 13 hours and 30 minutes
Wireless connectivity	Intels Wi-Fi 6E AX211 (2x2) and Bluetootho 5.3 wireless card (supporting gigabit data rate)
Ports	1 USB Type-A 10Gbps signaling rate
	2 Thunderbolt <sup>™</sup> 4 with USB Type-CA 40Gbps signaling rate
	1 headphone/microphone combo
Webcam	True Vision SMP IR camera with camera shutter, temporal noise reduction and integrated dual array digital microphones
Software	Windows 11 Enterprise
Weight	1.36 - 2 kg
Dimensions	29.8 x 22.04 x 1.69 cm
Warranty	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)
Keyboard	Full-size, backlit, nightfall black keyboard
Security management	All-in-One keyboard; Trusted Platform Module (Discrete TPM) support
Sensors	Accelerometer

	eCompass
	Color temperature light sensor
	Gyroscope
	IR thermal sensor
<b>Processor type</b>	Latest Generation

**5.13 High Spec Laptop**

Type	Laptop
Operating System	Windows 11 Enterprise
Graphics	NVIDIA RTX A2000 4 GB Graphics
Integrated Camera	Integrated HD 720p IR DualAryMic Webcam
Display	17.3 inch FHD (1920x1080) Anti-Glare LEDUWVA 300 for HD Webcam + IR ALSensor
System Memory	32GB (1x32GB) DDR4 3200
M.2 Storage	1TB PCIe-3x4 2280 NVMe TLC Solid State Drive
Internal Storage	1TB 7200RPM SATA
Near Field Communication	No Near Field Communication (No NFC)
Communication WLAN and BlueTooth	Intel Wi-Fi 6 AX201 ax 2x2 MU-MIMO nvP 160MHz +Bluetooth 5 WW with 2 Antennas
Wireless WAN	Intel XMM 7360 LTE-Advanced (Cat 9)
Fingerprint Sensor	Fingerprint Sensor
Battery	8 Cell 94 WHr Long Life
AC Adapter	200 Watt Smart PFC Slim AC Adapter
Power Cord	C13 1.0m Tag Premium Power Cord
Warranty	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)
Out-Of-Band Manageability	No vPro AMT supported
Drop in Box Miscellaneous	MISC Hard Drive Carrier Cage
Drop In Box Hardware	DIB MWKS TB Dock 230W
Drop In Box Hardware	DIB Sure Key Cable Lock
Drop In Box Hardware	DIB Business Backpack
Keyboard	Dual Point Backlit spill-resistant PremiumKeyboard
TechnicalAV	Electronic TCO Certified labeling
TechnicalAV	EU RED Pictogram Label
TechnicalAV	InTile Capable
TechnicalAV	Electronic Energy Star labeling (EStar)
Processor Labels	Core i9

<b>Term</b>	Meaning
LC	Lucent connector
SC	Standard connector
SFP	(Small Form-factor) A small transceiver or port
TB	Terra byte
(DVD-RW)	SATA Digital Versatile Disk Rewritable
MP	Mega Pixels

#### 5.14 Tablet:

The tablet shall have the following standards:

- 5.14.1 Display 10.1" inch LCD. captive touch screen, scratch resistant
- 5.14.2 Sound: Stereo speaker with three and a half mm audio jack
- 5.14.3 Compatible with the long term evolution network (LTE) or later.
- 5.14.4 Memory microSD up to 64 GB, Internal: 16/32/64 GB storage 3 GB RAM,
- 5.14.5 Bluetooth, infrared, microUSB v2.0 USB Host,
- 5.14.6 Cameras; 8 mega pixels (MP) primary and 5 MP secondary camera, (minimum)
- 5.14.7 Android or IOS operating system, CPU Quad-core 2.3 GHz
- 5.14.8 Messaging: short messaging service, (SMS threaded view), multimedia message (MMS), electronic mail (Email), Push Mail, instant messaging (IM),
- 5.14.10 The tablet shall support Real simple syndication (RSS) feeds, Browser: HTMLS,
- 5.14.11 The tablet shall be equipped with assisted global positioning system (A-GPS) and global satellite navigation system (GLONASS) support
- 5.14.12 Battery: Up to 2230 hours (h) h standby time and up to 1oh talk-time.

### 6 VXRail Enclosure VXRAIL 14G P SERIES.

**6.1 SYSTEM:** VXRail P570F or latest and compatible to the current models.

#### 6.2 HARDWARE:

- 6.2.1 CACHENVME800GB FVXRAIL-500
- 6.2.2 CACHE NVME 800GB SWPD 2.51
- 6.2.3 FXCVRSFPSR1G10GAFVXRAIL-500.
- 6.2.4 TRANSCEIVER LC SR 1G 10G AF SYS7402U1N24DNVFXRAIL-500 2U1N 24X2.5 NVME CAPABLE.
- 6.2.5 AF RISER740CNFG6DUALVXRAIL-500 RISER R740CNFG6 AND BOSS CTR.
- 6.2.6 HBA330CTRL2SFVXRAIL-500 PERCHBA330+RAIDCTR12GB 2SLP FLRDIMM2666INFOVXRAIL-500.
- 6.2.7 FACTORYORD RQ 2666MHZ LRDIMMS
- 6.2.8 MEMLRDIMM64GBAFVXRAIL-500 MEMORY 64GB LRDIMM
- 6.2.9 AF NDCX710QP10GBSFPVXRAIL-500 NDC INTELX710 QP 10GB
- 6.2.10 SFP+ AF INSTKITSFPAFHCA INSTALL KIT 10GBE SFP+ AF CAPSATASSD384TBVX5
- 6.2.11 VXRAIL-500 CAPACITY SATA SSD 3.84TB1WPD PR6142GD16C26AF.
- 6.2.12 VXRAIL-500 INTEL CPU 6142 16C 2.6 GHZ AF PS1600W-250VACF
- 6.2.13 VXRAIL-500 DUALHOTPLG 1600W PS-250VAC F INSTGR13ZAFR740
- 6.2.14 VXRAIL-500 SOUTH AFRICA SHIPMOD GR1300 TPM1.2MODULE
- 6.2.15 AFVXRAIL-500 TPM 1.2 MODULE AF PR6142GD16C26AF-2
- 6.2.16 VXRAIL-SOOINTELCPU 6142 16C 2.6 GHZ2NDAF 2SP570HSDM125
- 6.2.17 GRVXRAIL-500 2SP570 125GR CHASSIS,FAN, HSK PWR13-14-2M-EMEAC13-C14 PDU RACK PWR CRD 2M EMEA RAILKIT2U1N
- 6.2.18 AFVXRAIL-500 B4 RDYRAILS2-4POSTRACKS2U1NAF
- 6.2.19 M-PS-HW-DE14-
- 6.2.20 HARDWARE SUPPORT 3 YEARS

\*NB (Only the latest and compatible model shall be acceptable)

#### 6.3 Datacenter Network Switches and Accessories

- 6.3.1 DR SWITCHES \_ Dell Networking S5224-ON - [EMEA\_S5224\_ON]
- 6.3.1.1 Dell EMC S5224F-ON Switch, 24x 25GbE SFP28, 4x 100GbE QSFP28 ports, IO to PSU air, 2x PSU.
- 6.3.1.2 C13 Power Cord 220V 1.8M South Africa
- 6.3.1.3 OS10 Enterprise, S5224F-ON
- 6.3.1.4 Dell Networking, Transceiver, SFP+, 10GbE, SR, 850nm Wavelength, 300m Reach
- 6.3.1.5 Dell Networking Cable, 100GbE QSFP28 to QSFP28, Passive Copper Direct Attach Cable, 0.5 Meter
- 6.3.1.6 5 Years ProSupport Plus OS10 Enterprise Software Support-Maintenance
- 6.3.1.7 Base Warranty

\*\*\*\*\*6f3.1 8"1YrReturntoDepot-Mintmum"Warran \*\*\*\*\*

- 6.3.1.9 90 Day SW Bug Fixes Support Media Replacement
- 6.3.1.10 INFO 1Yr ProSupport Plus and 4hr Mission Critical
- 6.3.1.11 5Yr ProSupport Plus and 4hr Mission Critical
- 6.3.1.12 ProDeploy Plus Dell Networking S Series SXXX Switch - Deployment
- 6.3.1.13 ProDeploy Plus Dell Networking S Series SXXX Switch - Deployment Verification
- 6.3.1.14 ProDeploy Plus Training Credits 800 Redeem at education.dellemc.com Expires 1Yr from Order Date
- 6.4 Dell Networking Cable, OM4 LC/LC Fiber Cable, (Optics required), 5 Meter, Customer kit
- 6.5 Dell Networking Cable, OM4 LC/LC Fiber Cable, (Optics required), 10 Meter, Customer kit
- 6.6 C2G - Cat6 Ethernet (RJ-45) UTP Snagless Cable - Black - 5m
- 6.7 SFP28 SR Optic, 25GbE, 85C, for all SFP28 ports, Customer Install
- 6.8 VxRail After Point of Sale Upgrade
- 6.8.1 VxRail SFP+ SR 10GbE Optical Transceiver, High Temperature, Dell, CK APOS

## 7. Technical Specifications for ASE2000 Communication Test Set and CRSP Router - Cisco-867VAE-K9 VDSL/ADSL w/PSU

### 7.1 ASE2000 Communication Test Set

#### 7.1.1. Description

ASE2000 Communication Test Set is an integrated hardware and software product with simulation and test capabilities for a wide range of Network and Serial RTU and IED Protocols. The test set should include an ASE USB dual-channel serial I/O device, cables, adapters, software and documentation.

#### 7.1.2. Protocols supported

DNP3.0 serial  
DNP3.0 LAN/WAN  
IEC 60870-5-101  
IEC 60870-5-104

#### 7.1.3. Basic Test modes

Line monitor mode

Monitor communication between master and slave device (Master to RTU and RTU to Master must be displayed).

Master station mode

Communicate directly to the RTU by issuing data, control, and other requests.

RTU Simulation mode

Respond directly to the master by simulating one or more RTUs on a single line, each response must simulate analog, digital, and pulse accumulator point changes.

#### 7.1.4. Features

Line Monitor view

The view must be divided into two panes with raw data values on the left and interpreted data in the right.

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**Point Value view**

Displays input point data values (analog, digital, MDC, pulse) in a tubular format and in real-time. The view must show RTU ID, Master ID, point ID, point value and time tags as well as quality code information for applicable protocols.

**Exchange list**

The display must have various request and controls to allow communication to Master station or RTU.

**Line Analyzer view**

Analog and Digital Controls

English interpretation of communication line data values

Logging communication data to disk for later viewing (capture file)

Event triggering

Event logging capabilities

**7.1.5. Software options**

The must be compatible with Windows 10/11 or latest

**7.1.6. Hardware options**

ASE2000-USB-M that utilizes the dual —channel BCOM-USB device and ASE dual-channel Bell-202 modem for serial RS-232 operation on laptop.

The modem must be powered through the USB device.

BCOM-USB must provide status LED indications on each channel for RS-232 data and control signals (RxD, TxD, RTS, CTS and DCD)

RTU monitor, Master simulation and RTU simulation mode communications cables must be included.

**7.2. CRSP Router - Cisco-867VAE-K9 VDSL/ADSL w/PSU**

**7.2.1. Description**

An entry level member of the Cisco Integrated Services Router Generation 2 (ISR G2) family, the Cisco 867VAE Integrated Services Router offers connectivity to teleworkers and small branches.

**7.2.2. Capacity**

Type — IPsec VPN tunnels

Value—10

**7.2.3. Flash Memory**

Installed Size -65Mb

**7.2.4. Header**

Compatibility — PC

Manufacture — Cisco

Packaged Quantity 1

Product Line — Cisco

Model —867VAE

Brand — Cisco

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**7.2.5. Interface Provided**

Interface —VDSL2/ADSL  
Type - USB  
Qty — 4  
Connector Type — 4 pin USB Type A

**7.2.6. Line Properties**

Framing Format — ANSI T1.413

**7.2.7. Miscellaneous**

Compliant Standards —AS/NZS 3548, CISPR 22, CISPR 24, EN 61000-3-2, EN 61000-3-3, EN 61000-4-3, EN 61000-4-6, EN55022, EN55022 Class B, EN55024, FCC CFR47 Part 15, ICES-003, VCCI V-3  
Height(Racks Units) —1

**7.2.8. Modem**

Type -Router  
Connectivity Technology -Wired  
Data Link Protocol —Ethernet, Fast Ethernet, Gigabit Ethernet  
Remote Management Protocol —HTTP, HTTPS, SNMP 3, SSH  
Compliant Standards —IEEE 802.1Q, IEEE 802.3ah  
Feature —Auto-uplink (auto MDI/MDI-X), Class-Based Weighted Fair Queuing (CBWFQ), DHCP client, DHCP relay, DHCP server, DNS proxy, Firewall protection, IPv6 support, Low-latency queuing (LLQ), NetFlow, Web Services Management Agent (WSMA), Weighted Fair Queuing (WFQ).  
Network Transport Protocol -DHCP, DNS, IPSec, PPPoA, PPPoE  
Routing Protocol —RIP-1, RIP-2  
Integrated Switch — 4-port switch  
Form Factor —4-port switch  
WAN Ports Qty —2  
Key Features —Firewall, USB port

**7.2.9. OS Provided**

Type —Cisco IOS Advanced Security

**7.2.10. Power Device**

Frequency Required —50/60 Hz  
Power Provided —60 Watt  
Nominal Voltage —AC 120/230 V  
Type —External power adapter

**7.2.11.RAM**

Installed Size -256 MB  
Max Supported Size —256 MB

**8. Wireless Access Points (Huawei AirEngine 8771-X1T)**

- 8.1. Interfaces 10/100/1000 BASE-T autosensing (RJ45), 802.3af Ethernet Switch
- 8.2. External Power Supply, 2.4 GHz or five GHz Band, 802.11n, 3x2 multiple input multiple output (MIMO),
- 8.3. Access Point mode, wireless distribution system (WDS) bridging, Client



....."Bridge"mode/.....

- 8.4. VLAN support, 1 management VLAN plus 4 VLANs for service set identifier
- 8.5. (SSID), eight Multiple SSIDs, 802.1X supplichallt, SSID to VLAN mapping, Auto channel selection,
- 8.6. Spanning tree, Load balancing, IPv6, quality of service (QOS), Wi-Fi Multimedia and Traffic Specification (WMM TSPEC),
- 8.7. Maximum of eight access points (AP's) per cluster, eighty active clients per cluster,
- 8.8. Web browser, simple network management protocol (SNMP) and POE injectors where required.

**9. MAINTENANCE AND WARRANTY CONDITIONS**

- 9.1. The supplier shall guarantee correct operation of the equipment for at least 12 months, as of the date of signing the provisional Acceptance.

**10. DOCUMENTATION**

- 10.1. Full technical and functional details for all items offered shall be submitted.
- 10.2. All instruction manuals shall be provided for the equipment offered.
- 10.3. The manuals shall be in English and sufficiently detailed for each item offered and enable City Power staff to install, maintain, test, configure and use.

**11. MARKING AND LABELLING**

The following information shall appear in legible and indelible marking on the outside of the equipment.

- a. The manufacturer's name or trademark;
- b. Serial number for tracking
- c. Year of manufacturing

**12. TRAINING**

- a. The suppliers shall provide comprehensive training courses on the configuration, installation, operation and maintenance.
- b. Licensing of the system shall be incorporated into the contract where applicable.

**13. QUALITY MANAGEMENT**

A quality management system shall be set up in order to assure the quality of the equipment during design, development, production and servicing. Guidance on the requirements for a quality management system may be found in the following standards: ISO 9001:2015. The details shall be subject to agreement between the purchaser and supplier.

**14. HEALTH AND SAFETY**

A health and safety plan shall be set up in order to ensure proper management and compliance of the equipment during installation, operation, maintenance, and decommissioning phases. Guidance on the requirements of a health and safety plan shall be found in ISO 45001:2018 standards. The details shall be subject to agreement between City Power and the Supplier.

**15. ENVIRONMENTAL MANAGEMENT**

An environmental management plan shall be set up in order to ensure the proper environmental management and compliance of the equipment during their entire life cycle



### ANNEXURE A - Bibliography

None

ANNEXURE B - Revision information

<b>DATE</b>	<b>REV. NO.</b>	<b>NOTES</b>
October 2018	0	First issue
February 2022	1	Second issue
March 2024	2	Third Issue

Update technology throughout the entire specification.  
Added access points, laptops and router,

**Annex C - Technical schedules A and B for  
Desktop Platforms**

Schedule A: Purchaser's specific requirements

**Schedule B: Guarantees and technical particulars of equipment offered**

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
1.	5.1	Desktop Platforms ( all desktop Platforms)	YES	
	5.1.1	Ports: USB, serial, HDMI, Parallel and VGA	Requirement	
	5.1.2	Network interface card	100 -1kMBps	
	5.1.3	Sound card	Requirement	
	5.1.4	USB optical mouse	Requirement	
	5.1.5	USB keyboard	Requirement	
	5.1.6	Desktop and Monitor Cable lock	Requirement	
	5.1.7	Preloaded with a preconfigured City Power image	Requirement	
	5.1.8	Built in Wi-Fi	Requirement	
	5.1.9	23" inch LCD monitor	Requirement	
	5.1.10	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)	Requirement	

Note: Ticks, Cross [g, X], Astrick {\*}, Word [Noted] or TBA ["To Be Advice"] shall not be **accepted.**

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Annex C - **Technical Schedules A and B for  
Standard Full-tower (i5)**

Schedule A: Purchaser's specific requirements

**Schedule B: Guarantees and technical particulars of equipment offered**

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
<b>2.</b>	<b>5.2</b>	Standard Full-tower (i5)	YES	
	5.2.1	Intel based processor.	»=i5	
	5.2.2	USB RAM	»=16 GB	
	5.2.3	500 GB SSD hard drive	>=500 GB	
	<b>5.2.4</b>	Black chassis	»= 1	
	5.2.5	2 x HDMI ports	YES	
	5.2.6	2 x USB 3 ports	YES	
	5.2.7	Peripheral component interconnects (PCI) Slot (Minimum of one)	Min	
	5.2.8	SATA Digital Versatile Disk Rewritable (DVD- RW)	Min	
	5.2.9	Graphics card (Minimum of 512MB)	Min	
	5.2.10	USB cordless optical mouse	Requirement	
	5.2.11	USB cordless keyboard	Requirement	
	5.2.12	23" inch LCD monitor	Requirement	
	5.2.13	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)	Requirement	

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**Annex C - Technical Schedules A and B for  
High Spec Full-tower (i7)**

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
3.	5.3	High Spec Full-tower (i7)	YES	
	5.3.1	Intel based processor.	»=i7	
	5.3.2	16 GB RAM	»= 16GB	
	5.3.3	SOOGB hard drive: SSD	»= 500 GB	
	5.3.4	Black chassis	Requirement	
	5.3.5	PCI Slot	»= 1	
	5.3.6	SATA DVD-RW	Requirement	
	5.3.7	23" inch LCD monitor		
	5.3.8	Graphics card	>= 1024MB	
	5.3.9	2 x HDMI ports	Min	
	5.3.10	2 x USB 3 ports	Min	
	5.3.11	USB cordless optical mouse	Requirement	
	5.3.12	USB cordless keyboard	Requirement	
	5.3.13	4 Year Parts and Labor Limited Warranty, <i>plus</i> Accidental Damage Protection (ADP, sometimes called Complete Care)	Yes	

Note: Ticks, Cross (☐, X), Astrick {\*}, Word [Noted] or TBA ["To Be Advice"] shall not be accepted.

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**Annex C - Technical Schedules A and B for Specialized Work stations**

**Schedule A: Purchaser's specific requirements**

**Schedule B: Guarantees and technical particulars of equipment offered**

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
4.	5.4	Specialized Work stations	YES	
	5.4.1	Grade: Workstation Grade i9 Processor	Comply	
	5.4.2	RAM: 32 GB	Requirement	
	5.4.3	500 GB SSD hard drive	Requirement	
	5.4.4	Processor speed: 3.0 GHZ each processor	Requirement	
	5.4.5	2 x HDMI ports	Requirement	
	5.4.6	2 x USB 3 ports	Requirement	
	5.4.7	USB cordless optical mouse	Requirement	
	5.4.8	USB cordless keyboard	Requirement	
	5.4.9	nterfaces: 1 GB dual Ethernet ports Should support LAN teaming or Bonding	Requirement	
	5.4.10	User interface: Three/Two(as per BOQ) 24" wide screen (16:9 aspect ratio), HD Resolution (1920x1080) TFT Colour monitors, keyboard & optical Bluetooth mouse	Requirement	
	5.4.11	Mounting Desktop mounting	Requirement	
	5.4.12	Quad port Graphics Card: 4 GB, supports OpenGL 4 or higher. Supports 4 displays	Requirement	
	5.4.13	Operating system: Windows11 Enterprise	Requirement	
	5.4.14	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)	Requirement	

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**Annex C - Technical Schedules A and B for  
All in one Desktop (i7)**

Schedule A: Purchaser's **specific requirements**

Schedule B: Guarantees and technical particulars **of equipment** offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
s.	5.5	All in one Desktop (i7)	YES	
	5.5.1	Base Unit EliteOne 800 G6 24 AiO BU -Non-Touch IDS	Comply	
	5.5.2	TCO Compliance Electronic TCO Edge Certified labeling	Requirement	
	5.5.3	Processor Intel Core i7 10700 8C 65W CPU	i7 10700 8C 65W CPU	
	5.5.4	Operating System Windows 11 Enterprise 64bit	Requirement	
	5.5.5	5.6.6Operating System Image Optimization Corporate-Ready Image	Requirement	
	5.5.6	Camera Integrated SMP Webcam	SMP Webcam	
	5.5.7	System Memory 16GB (1x16GB) DDR4 2666 SODIMM Memory	Requirement	
	5.5.8	NVMe TLC Solid State Drive	»=M.2 SOOGB	
	5.5.9	Cordless USB 320K Keyboard SA	»=USB 320K	
	5.5.10	Cordless Mouse USB Optical	USB Optical	
	5.5.11	NetworkingIntel Wi-Fi 6 AX201 ax 2x2 vPro +Bluetooth 5.1 WW	Requirement	
	5.5.12	Fingerprint Reader, Fingerprint Sensor	Requirement	
	5.5.13	AudioAiO AiO Internal Stereo (SW) Speakers	Requirement	
	5.5.14	Packaging OptionsSingle Unit (All-in-One) Adjustable Height Stand Packaging	State	
	5.5.15	Microsoft Teams Ready	Requirement	
	5.5.16	WLAN AX201 ax 2x2 vPro Label		
	5.5.17	DVDRW HP USB External DVDRW Drive	Requirement	
	5.5.18	4 Year Parts and Labor Limited Warranty, <i>plus</i> Accidental Damage Protection (ADP, sometimes called Complete Care)	State	

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**Annex C - Technical Schedules A and B for  
Desktop Monitor 24-inch Widescreen**

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
<b>g.</b>	<b>5.6</b>	Desktop Monitor 24 inch Widescreen	YES	
	<b>5.6.1</b>	Aspect ratio	»= 16:9	
	<b>5.6.2</b>	Resolution;	>= 16K " 9	
	<b>5.6.2</b>	Pixel pitch of	0.2768 mm	
	<b>5.6.3</b>	Brightness:	250(cd/m*)	
	5.6.4	Contrast ratio: static and dynamic,	1k:1 and 3k:1	
	5.6.5	View angle: horizontal; vertical	170°;160°	
	5.6.6	Response time:	Sms on/off	
	5.6.7	Tilt and swivel angle:	-5 - 25°	
	5.6.8	User programmable with On-screen controls and language selection.	Requirement	
	5.6.9	Backlights, Light emitting diode	LED	
	5.6.10	Input connector:	1VGA, 1DVI with HDCP	
	5.6.11	Power Input voltage	100 -240 V	
	5.6.12	Operating temperature range: )	(5 to 35°C)	
	5.6.13	humidity range	(20 to 80% RH.)	
	5.6.14	Operating time	24/7/365	

Note: Ticks, Cross [J, X], Astrick {\*}, Word [Noted] or TBA ["To Be Advice"] shall not be accepted.

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**Annex C - Technical Schedules A and B for  
Desktop Monitor 27 inch**

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
7.	5.7	Desktop Monitor 27 inch	YES	
	5.7.1	Diagonal viewing size:	68.6cm, 27	
	5.7.2	Aspect ratio	(16:9)	
	5.7.3	Contrast ratio: (1000:1), 8 million : 1 (dynamic)	YES	
	5.7.4	Brightness:	>=300cd/m2	
	5.7.5	Response time: (gray to gray)	>=6ms	
	5.7.6	Tilt and swivel	YES	
	5.7.7	Backlight technology: LED	Requirement	
	5.7.8	Connector: HDMI(with HDCP) , VGA	Requirement	
	5.7.9	Power: VAC	100 to 240	
	5.7.10	Operating time	24/7/365	
	5.7.11	Viewing angle:	»=178:178	

Note: Ticks, Cross [g, X], Astrick {\*}, Word [Noted] or TBA ["To Be Advice"] shall not be accepted.

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**Annex C - Technical Schedules A and B for  
Specialized workstation monitor**

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
g.	5.8	Specialized workstation monitor		
	5.8.1	Diagonal Viewable size:	24"	
	5.8.2	Color support:	16.7 million	
	5.8.3	On screen control:	Required	
	5.8.4	Anti-glare & anti-static:	Required	
	5.8.5	Tilt , Swivel:	Required	
	5.8.6	Aspect ratio:	16:09	

Note: Ticks, Cross [J, X], Astrick ['], Word [Noted] or TBA ["To Be Advice"] shall not be accepted.

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**Annex C - Technical Schedules A and B for  
Desktop Graphics Card**

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
g.	5.9	Desktop Graphics Card	YES	
	5.9.1	Support display.	»=Quad	
	5.9.2	Quad HDMI, Display Port output,	»= 4	
	5.9.3	1GB, Double data rate, type three synchronous dynamic random-access memory or (SDRAM) with a high bandwidth interface (DDR3),	»=1GB, DDR3	
	5.9.4	PCI Express " 16 and a vertical refresh rate	Max 85Hz	
	5.9.5	DDR3 or more	»=64BW	
	5.9.6	Display support:	400Mhz RAMDAC	
	5.9.7	Display max resolution:	2560:1600D 2048:1560A	
	5.9.8	HDMI	Requirement	

Note: Ticks, Cross [J, X], Astrick {}, Word [Noted] or TBA ["To Be Advice"] shall not be **accepted.**

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**Annex C - Technical Schedules A and B for  
Mobile Platforms:**

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
10.		Mobile Platforms: (All Laptops shall have the following as standard)	YES	
	5.10.1	USB, HDMI, and VGA Ports	YES	
	5.10.2	Network interface card	(100,1000)	
	5.10.3	Sound card	Requirement	
	5.10.4	USB infrared mouse	Requirement	
	5.10.5	Notebook cable lock (compatible with desktop)	Requirement	
	5.10.6	Notebook case	Requirement	
	5.10.7	Docking station (compatible)	Requirement	
	5.10.8	Preloaded with a preconfigured City Power image.	Requirement	
	5.10.9	Built in wireless modem	Requirement	

Note: Ticks, Cross [J, X], Astrick {\*}, Word [Noted] or TBA ["To Be Advice"] shall not be accepted.

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**Annex C - Technical Schedules A and B for  
Standard Laptop**

Schedule A: Purchaser's **specific requirements**

Schedule B: Guarantees **and technical particulars** of equipment **offered**

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
11.		Standard Laptop	YES	
	5.11.1	intel Core i5-1335U Processor (0.9 GHz Efficient-core base frequency, up to Efficient-core 3.4 GHz frequency with Intel Turbo Boost Technology 12 MB cache and 10 cores)	»= i5	
	5.11.2	16 GB DDR4-3200 SDRAM (1 x 16 GB)	=16 GB	
	5.11.3	512 GB PCIeO NVMe™ SSD	=500GB	
	5.11.4	intel Iris Xe Graphics	Requirement	
	5.11.5	(2) Integrated stereo speakers Integrated dual array microphone	Requirement	
	5.11.6	15.6" WXGA or better	Requirement	
	5.11.7	65 W USB Type-C™ adapter	Requirement	
	5.11.8	Long Life 3-cell, 51.3 Wh Polymer	Requirement	
	5.11.9	ntelo Wi-Fi 6E AX211 (2x2) and Bluetooth6 5.3 wireless card (supporting gigabit data rate)	Requirement	
	5.11.10	(1) Thunderbolt 4 with USB4 Type-C port; 40 Gbps signalling rate (USB Power Delivery and DisplayPort 1.4)	Requirement	
	5.11.11	(1) SuperSpeed+ USB 3.2 Gen 2.0 Type-C port; 10 Gbps signalling rate (USB Power Delivery, DisplayPort 1.4)	Requirement	
	5.11.12	(2) SuperSpeed USB 3.2 Gen 1.0 Type-A ports; 5 Gbps signalling rate (one charging port)	Requirement	
	5.11.13	(1) Ethernet (RJ-45) port	Requirement	
	5.11.15	(1) HDMI 2.1 port (cable sold separately)	Requirement	
	5.11.16	(1) Headphone/microphone combo jack	Requirement	
	5.11.17	(1) SmartCard Reader (optional)	Requirement	
	5.11.18	(1) Nano SIM slot for WWAN (optional)	Requirement	
	5.11.19	(1) Power input port	Requirement	
	5.11.20	720p HD IR camera	Requirement	
	5.11.21	Windows 11 Pro	Requirement	
	5.11.22	1.78 kg	Requirement	
	5.11.23	35.94 x 23.39 x 1.99 cm	Requirement	
	5.11.24	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)	Requirement	
	5.11.25	Premium Keyboard — spill-resistant, backlit keyboard with numeric keypad	Requirement	
	5.11.26	Wolf Security of Business	Requirement	
	5.11.27	Fingerprint sensor (select models)	Requirement	
	5.11.28	Sure Click	Requirement	
	5.11.29	Sure Sense	Requirement	

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5.11.30	Sure Run	Requirement	
5.11.31	Sure Recover	Requirement	
5.11.32	Sure Start	Requirement	
5.11.33	Tamper Lock	Requirement	
5.11.34	Sure Admin	Requirement	
5.11.35	Latest generation	Requirement	
5.11.36	Security Lock	Requirement	
5.11.37	Laptop Bag	Requirement	
5.11.38	Portable Docking Station (Type-C connector) with VGA HDMI, Network and USB	Requirement	

**Note: Ticks, Cross [J, X], Astrick {\*}, Word [Noted] or TBA [“To Be Advice”] shall not be accepted.**

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**Annex C - Technical Schedules A and B  
for Executive High Spec Laptop**

**Schedule A: Purchaser's specific requirements**

**Schedule B: Guarantees and technical particulars of equipment offered**

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
12.				
	5.12.1	Tablet/Laptop type with stylus and touch screen	Requirement	
	5.12.2	ntelo Core <sup>™</sup> i7-1355U (up to 5.0 GHz with Intel Turbo Boost Technology, 12 MB L3 cache, 10 cores, 12 threads)	»= i7	
	5.12.3	ntel@ integrated SoC		
	5.12.4	16 GB LPDDR4x-4266 MHz RAM (onboard)	"- 16 GB	
	5.12.5	1 TB PCIe@ Gen4 NVMe <sup>™</sup> TLC M.2 SSD	= 1TB	
	5.12.6	ntegrated, Intel@ Iris@ Xe Graphics	Requirement	
	5.12.7	Audio by Bang & Olufsen	Requirement	
	5.12.8	Quad speakers	Requirement	
	5.12.9	Audio Boost	Requirement	
	5.12.10	34.3 cm (13.5") diagonal	Requirement	
	5.12.11	WUXGA+ (1920 1280)	Requirement	
	5.12.12	multitouch-enabled	Requirement	
	5.12.13	Ps	Requirement	
	5.12.14	edge-to-edge glass	Requirement	
	5.12.15	micro-edge	Requirement	
	5.12.16	anti-reflection Corning@ Gorilla@ Glass NBT <sup>™</sup>	Requirement	
	5.12.17	Low Blue Light	Requirement	
	5.12.18	400 nits	Requirement	
	5.12.19	ow power	Requirement	
	5.12.20	100% sRGB	Requirement	
	5.12.21	90.11%	Requirement	
	5.12.22	65 W USB Type-C@ power adapter	Requirement	
	5.12.23	4-cell, 66 Wh Li-ion polymer	Requirement	
	5.12.24	Up to 13 hours and 30 minutes	Requirement	
	5.12.25	ntel@ Wi-Fi 6E AX211 (2x2) and Bluetooth <sup>®</sup> 5.3 wireless card (supporting gigabit data rate)	Requirement	
	5.12.26	1 USB Type-A 10Gbps signaling rate	Requirement	
	5.12.27	2 Thunderbolt <sup>™</sup> 4 with USB Type-C@ 40Gbps signaling rate	Requirement	
	5.12.28	1 headphone/microphone combo	Requirement	
	5.12.29	True Vision SMP IR camera with camera shutter, temporal noise reduction and integrated dual array digital microphones	Requirement	
	5.12.30	Windows 11 Enterprise	Requirement	
	5.12.31	1.36 - 2 kg	Requirement	
	5.12.32	29.8 x 22.04 x 1.69 cm	Requirement	

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5.12.33	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)	Requirement	
5.12.34	Full-size, backlit, nightfall black keyboard	Requirement	
5.12.35	All-in-One keyboard; Trusted Platform Module (Discrete TPM) support	Requirement	
5.12.36	Accelerometer	Requirement	
5.12.37	eCompass	Requirement	
5.12.38	Color temperature light sensor	Requirement	
5.12.39	Gyroscope	Requirement	
5.12.40	R thermal sensor	Requirement	
5.12.41	Latest Generation	Requirement	

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**Annex C - Technical Schedules A and B for  
High Spec Laptop**

**Schedule A: Purchaser's specific requirements**

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub•clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
13.	5.13.1	Laptop Workstation		
	5.13.2	Laptop	>= i9	
	5.13.3	Windows 11 Enterprise	»=32GB	
	5.13.4	NVIDIA RTX A2000 4 GB Graphics	»=1 TB	
	5.13.5	ntegrated 720p IR DualAryMic Webcam	Requirement	
	5.13.6	17.3 inch FHD (1920x1080) Anti-Glare LEDUWVA 300 for Webcam -r IR ALSensor	Requirement	
	5.13.7	32GB (1x32GB) DDR4 3200	Requirement	
	5.13.8	1TB PCIe-3x4 2280 NVMe TLC Solid State Drive	Requirement	
	5.13.9	1TB 7200RPM SATA	Requirement	
	5.13.10	No Near Field Communication (No NFC)	Requirement	
	5.13.11	ntel Wi-Fi 6 AX201 ax 2x2 MU-MIMO nvP 160MHZ +Bluetooth 5 WW with 2 Antennas	Requirement	
	5.13.12	ntel XMM 7360 LTE-Advanced (Cat 9)	Requirement	
	5.13.13	Fingerprint Sensor	Requirement	
	5.13.14	8 Cell 94 WHr Long Life	Requirement	
	5.13.15	200 Watt Smart PFC Slim AC Adapter	Requirement	
	5.13.16	C13 1.0m Tag Premium Power Cord	Requirement	
	5.13.17	4 Year Parts and Labor Limited Warranty, plus Accidental Damage Protection (ADP, sometimes called Complete Care)	Requirement	

Note: Ticks, Cross [g, X], Astrick {"}, Word (Noted] or TBA ["To Be Advice") shall not be **accepted.**

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Annex C - Technical schedules A and B for  
Tablet

Schedule A: Purchaser's specific requirements

Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
14.	5.14	Name of OEM	XXXX	
	5.14.1	Tablet	YES	
	5.14.2	Display 10.1" inch LCD. captive touch screen, scratch resistant	Requirement	
	5.14.3	Sound: Stereo speaker with 3.5mm audio jack	Requirement	
	5.14.4	Memory microSD up to 64 GB, Internal: 16/32/64 GB storage 3 GB RAM,	»= 64GB	
	5.14.5	Bluetooth, infrared, micro USB v2.0 USB Host, ,	YES	
	5.14.6	Cameras; 8 mega pixels (MP) primary and 5 MP secondary camera, (minimum)	<=8MP	
	5.14.7	Android or IOS operating system, CPU Quad-core 2.3 GHz	Yes	
	5.14.8	Messaging: short messaging service, (SMS threaded view), multimedia message	Yes	
	5.14.9	(MMS), electronic mail (Email), Push Mail, instant messaging (IM),	YES	
	5.14.10	The tablet shall support Real simple syndication (RSS) feeds, Browser: HTMLS,	YES	
	5.14.11	The tablet shall be equipped with assisted global positioning system (A-GPS) and globalsatellite navigation system (GLONASS) support	Requirement	
	5.14.12	Battery: Up to 2230 hours (h) h standby time and up to 1oh talk-time.	Requirement	

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**Annex C - Technical Schedules A and B for  
VXRail enclosure VXRAIL 14G P  
SERIES**

**Schedule A: Purchaser's specific requirements**

**Schedule B: Guarantees and technical particulars of equipment offered**

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
t5.	6	VXRail enclosure VXRAIL 14G P SERIES.	YES	
	6.1	<b>SYSTEM:</b> VXRail P570F or latest and compatible to the current models.	YES	
	6.2	<b>HARDWARE:</b>		
	6.2.1	CACHENVME800GB FVXRAIL-500	YES	
	6.2.2	CACHE NVME 800GB SWPD 2.51	Requirement	
	6.2.3	FXCVRSFPSR1G10GAFVXRAIL-500.	Requirement	
	6.2.4	TRANSCEIVER LC SR 1G 10G AF SYS7402U1N24DNVFXRIL-500 2U1N 24X2.5 NVME CAPABLE.	Requirement	
	6.2.5	AF RISER740CNFG6DUALVXRIL-500 RISER R740CNFG6 AND BOSS CTR.	Requirement	
	6.2.6	HBA330CTRL2SFVXRIL-500 PERCHBA330+RAIDCTR12GB 2SLP FLRDIMM2666INFOVXRIL- 500.	Requirement	
	6.2.7	FACTORYORD RQ 2666MHZ LRDIMMS	Requirement	
	6.2.8	MEMLRDIMM64GBAFVXRIL-500 MEMORY 64GB LRDIMM	Requirement	
	6.2.9	AF NDCX710QP10GBSFPFVXRIL-500 NDC INTELX710 QP 10GB	Requirement	
	6.2.10	SFP+ AF INSTKITSFPAFHICIA INSTALL KIT 10GBE SFP+ AF CAPSATASSD384TBVX5	Requirement	
	6.2.11	VXRIL-500 CAPACITY SATA SSD 3.84TB1WPD PR6142GD16C26AF.	Requirement	
	6.2.12	VXRIL-500 INTEL CPU 6142 16C 2.6 GHZ AF PS1600W-250VACF	Requirement	
	6.2.13	VXRIL-500 DUALHOTPLG 1600W PS-250VAC F INSTGR13ZAFR740	Requirement	
	6.2.14	VXRIL-500 SOUTH AFRICA SHIPMOD GR1300 TPM1.2MODULE	Requirement	
	6.2.15	AFVXRIL-500 TPM 1.2 MODULE AF PR6142GD16C26AF-2	Requirement	
	6.2.16	VXRIL-SOOINTELCPU 6142 16C 2.6 GHZ2NDAF 2SP570HSDM125	Requirement	
	6.2.17	GRVXRIL-500 2SP570 125GR CHASSIS,FAN, HSK PWR13-14-2M-EMEAC13- C14 PDU RACK PWR CRD 2M EMEA RAILKIT2U1N	Requirement	
	6.2.18	AFVXRIL-500 B4 RDYRAILS2- 4POSTRACKS2U1NAF	Requirement	
	6.2.19	M-PS-HW-DE14-	Requirement	

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	6.2.20	HARDWARE SUPPORT 3 YEARS	Requirement	
		*NB (Only the latest and compatible model shall be acceptable)		

Note: Ticks, Cross [J, X], Astrick {\*}, Word [Noted] or TBA ["To Be Advice"] shall not be accepted.

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**Annex C - Technical Schedules A and B for Datacenter Network Switches and Accessories**

Schedule A: Purchaser's specific requirements  
Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
		Name of OEM	XXXX	
6.3	6.3	Datacenter Network Switches and Accessories	vEs	
6.3.1	6.3.1	DR SWITCHES _ Dell Networking S5224-ON - [EMEA_S5224_ON]	Requirement	
6.3.1.1	6.3.1.1	Dell EMC S5224F-ON Switch, 24x 25GbE SFP28, 4x 100GbE QSFP28 ports, IO to PSU air, 2x PSU.	Requirement	
6.3.1.2	6.3.1.2	C13 Power Cord 220V 1.8M South Africa	Requirement	
6.3.1.3	6.3.1.3	OS10 Enterprise, S5224F-ON	Requirement	
6.3.1.4	6.3.1.4	D50Ne : k P+, 10GbE, SR, Requirement		
6.3.1.5	6.3.1.5	Dell Networking Cable, 100GbE QSFP28 to QSFP28, Passive Copper Direct Attach Cable, 0.5 Meter	Requirement	
6.3.1.6	6.3.1.6	PS SpppoMP e a l c 0 Enterprise	Requirement	
6.3.1.7	6.3.1.7	Base Warranty	Requirement	
6.3.1.8	6.3.1.8	1Yr Return to Depot - Minimum Warranty	Requirement	
6.3.1.9	6.3.1.9	90 Day SW Bug Fixes Support Media Replacement	Requirement	
6.3.1.10	6.3.1.10	FO 1 Yr ProSupport Plus and 4hr Mission	Requirement	
6.3.1.11	6.3.1.11	5Yr ProSupport Plus and 4hr Mission Critical	Requirement	
6.3.1.12	6.3.1.12	ProDeploy Plus Dell Networking S Series SXXX Switch — Deployment	Requirement	
6.3.1.13	6.3.1.13	s l l i t ' c h e P l e t V f i t n o g n N s Series SXXX	Requirement	
6.3.1.14	6.3.1.14	ProDeploy Plus Training Credits 800 Redeem at education.dell.com Expires 1Yr from Order Date	Requirement	
6.4	6.4	Dell Networking Cable, OM4 LC/LC Fiber Cable, (Optics required), 5 Meter, Customer kit	Requirement	
6.5	6.5	tNe negdiao MetM4C sLome ber Cable, Requirement		
6.6	6.6	Ciae Bl i c Eth5 net (RJ-45) UTP Snagless	Requirement	
6.7	6.7	psFP28 2 bE, 85C, for all SFP28 SuRt e t	Requirement	
6.8	6.8	VxRa'il After Point of Sale Upgrade	Requirement	
6.8.1	6.8.1	: R T m % r Rre bE, OitAr/os insceiver,	Requirement	

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**Annex C - Technical Schedules A and B for ASE2000 Communication Test Set and CRSP Router - Cisco-867VAE-K9 VDSL/ADSL w/PSU**

Schedule A: Purchaser's specific requirements  
 Schedule B: Guarantees and technical particulars of equipment offered

		Name of OEM	XXXX	
17	8.1	ASE2000 Communication Test Set	Requirement	
	8.2	CRSP Router — Cisco-867VAE-K9 VDSL/ADSL w/PSU	Requirement	

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**Annex C - Technical Schedules A and B for Wireless Access Point**

Schedule A: Purchaser's specific requirements  
 Schedule B: Guarantees and technical particulars of equipment offered

Item	Sub-clause of CP_TSSPEC_263	Description	Schedule A	Schedule B
18.		Name of OEM	XXXX	
	<b>9.</b>	Wireless Access Point		
	9.1.	nterfaces 10/100/1000 BASE-T autosensing (RJ45), 802.3af Ethernet Switch	Requirement	
	9.2.	External Power Supply, 2.4 GHz or five GHZ Band, 802.11n, 3x2 multiple input multiple output	Requirement	





		A health and safety plan shall be set up as to clause 14	Requirement	
<b>25</b>	<b>15</b>	ENVIRONMENTAL MANAGEMENT		
		An environmental management plan shall be set up as to clause 15	Requirement	

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