



**THE UNITED REPUBLIC OF TANZANIA**  
**PRESIDENT'S OFFICE, PUBLIC SERVICE MANAGEMENT AND GOOD**  
**GOVERNANCE**  
**e-GOVERNMENT AUTHORITY**

**Document Title**

Government Hardware and Software Specifications

**Document Number**

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<b>APPROVAL</b>	<b>Name</b>	<b>Job Title/ Role</b>	<b>Signature</b>	<b>Date</b>
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**PREFACE**

The rapid growth of ICT has changed to a large extent operations of the Government and society at large. This growth has enhanced diverse usage of hardware platforms and software applications as necessary tools for improved service delivery to citizens. In the quest of reaping benefits brought by the growth of ICT, the Government needs more sophisticated approach to enhance coordinated adoptions of ICT within its institutions.

In that regard, it was apparent for enactment of the e-Government Act No. 10 of 2019 and its Regulations, 2020, which provide guidance on proper approach for implementing e-Government. Likewise, it was necessary for establishment of e-Government Authority with mandate of coordinating, promoting and overseeing e-Government implementations as well as enforcing compliance with laws, regulations, standards and guidelines related to e-Government implementations in Public Institutions.

In this context, Section 5(2) (d) and 26 (1) (a) of the Act empowers e-Government Authority to approve software and hardware to be used by public institutions in a manner that facilitates proper utilization and management of the Government owned ICT resources. Pursuant to these provisions, the Authority has prepared this document to prescribe minimum specifications for hardware and software to be used in the Government.



Dr. Mussa M. Kissaka

**BOARD CHAIRPERSON**

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## **1. INTRODUCTION**

### **1.1 Overview**

e-Government Authority also known as "e-GA" is a public institution established by the e-Government Act No. 10 of 2019. The Authority is mandated to Coordinate, Oversee and Promote e-Government initiatives and enforce e-Government related Policies, Laws, Regulations, Standards and Guidelines in Public Institutions. The Act empowers e-GA to effectively formulate, manage and enforce Public Institutions compliance with e-Government standards and guidelines.

The e-Government Act calls upon the Authority to prepare Government acquisition of ICT resources specification guide. Therefore, the Authority has prepared hardware and software specifications guide to be adhered to by public institutions. These specifications will be valid for a period of twelve months (12) after being signed by the Board Chairperson. The specifications will be updated whenever need arise. The specifications should be complied by all public institutions at the time of procurement.

### **1.2 Purpose**

This document provides minimum specifications for hardware and software for the purpose of proper utilization and management of Government owned ICT resources.

### **1.3 Rationale**

Hardware and software specifications describe minimum requirements to be fulfilled by given hardware or software. The specifications will guide public institutions to observe value for money, flexibility, scalability, integration and interoperability in sourcing or using hardware and software following the guidance provided on the recommended specifications.

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**1.4 Scope**

This document will be used by all Public Institutions during the sourcing or using hardware and software.

**2. SPECIFICATIONS**

**2.1 Hardware Grouping**

<b>ICT HARDWARE GROUPS</b>		
<b>CODES</b>	<b>COMMODITY NAME</b>	<b>GROUPS</b>
<b>CLASS: COMPUTER DATA INPUT DEVICES</b>		
43211714	Biometric identification equipment	Time and attendance tracking Access control Identification control
43211712	Graphics tablets	Digital signature display
43211701	Code reader equipment	Barcode reader QR Reader
43211702	Magnetic stripe readers	Swipe Insert
43211706	Keyboards	Gaming keyboards Standard keyboard Ergonomic keyboard Mini Keyboard
43211726	Digital pen	Light stylus Pressure stylus
43211708	Computer mouse or trackballs	Gaming mouse Standard mouse Ergonomic mouse
43211710	Radio frequency identification devices (RFID)	Radio frequency identification devices (RFID)
43211711	Scanners	Document scanning Artwork scanning: 3D scanning: Scanners Archiving and digitization
43211713	Signature Touch pads	Signature Touch pads
43211717	Optical character recognition systems	Optical character recognition systems
43211719		Wired

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<b>ICT HARDWARE GROUPS</b>		
<b>CODES</b>	<b>COMMODITY NAME</b>	<b>GROUPS</b>
	Voice microphones for computers	Wireless
43211720	Point of sale payment terminal	Point of sale payment terminal
43211723	Electronic voting or vote-counting equipment	
43211724	Computer peripheral kit	Computer peripheral kit
43211728	Smart card dummy terminal	Access control
		Transportation
		Payment processing
43211729	Optical mark reader	Optical mark reader
43211802	Mouse pads	Mouse pads
<b>CLASS: PRINTERS</b>		
43212103	Publications and offset printers	Newspapers
		Books and Journals
43212104	Wide format printers	Billboards
		Posters, signage, banners and tarpaulin
43212105	Office Shared and Digital image Printers	Small Scale Users (Less 20 users)
		Medium Scale Users (20 - 50)
		Large Scale Users (More than 50)
		Large Scale Users - Colored (More than 50)
		PVC (ID) Card Printers
		Executive Printers (Colored)
		Secretarial Printers
43212107	Technical Drawing printers	Maps and Geospatial data
		Blueprints
43212109	Tags and labels printer	Shipping labels printer
		Luggage and Bag tags printer
		Barcodes printer
43212111	Airline Ticketing and Board pass printers	Airline ticket printer
		Boarding pass printer
43212112	POS receipt printers	Point of Sales
43212113	Textile Industry printers	Textiles printer
		Tiles printer
		Clothing printer
	3D Printer	
<b>CLASS: SERVERS</b>		

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<b>ICT HARDWARE GROUPS</b>		
<b>CODES</b>	<b>COMMODITY NAME</b>	<b>GROUPS</b>
43211501	Servers	Standard Server (less than 1,000 users)
		Mid-range Server (less than 10,000 users)
43211502	High end Servers	Mission Critical Applications /High resource demanding application)
<b>CLASS: NETWORK SECURITY EQUIPMENTS</b>		
43222501	Firewall network security equipment	Small Scale Firewalls (less than 1Gbps traffic)
		Medium Scale Firewalls (less than 40Gbps traffic)
		Large Scale Firewalls (greater than 40Gbps traffic)
<b>CLASS: NETWORK SERVICE EQUIPMENT</b>		
43222612	Network switches	Datacenter switches
		Core Switches
		Distribution Switches
		Access switches
43222615	Storage Area Network SAN Switch	SAN switch
43222609	Network routers	Small Office/Home Office (SOHO)
		Edge Routers (Branch Routers)
		Service Aggregation Routers
		Service Provider Routers
43222634	Network management or monitoring device	Secure Network Server Appliance
43222640	Wireless access point	Small Scale (less than 25 users)
		Medium Scale (less than 500 users)
		Large Scale (Grater than 500 users)
<b>CLASS: COMPUTERS</b>		
43211503	Notebook computers (Laptops)	Political Leaders (Ministers, Regional Commissioners, District Commissioners, Speaker, Deputy Speaker, Members of Parliament)
		Executive Management (Chief Secretary, Chief Justice, Permanent Secretaries,

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<b>ICT HARDWARE GROUPS</b>		
<b>CODES</b>	<b>COMMODITY NAME</b>	<b>GROUPS</b>
		Attorney General, Judges, Deputy Attorney General, Deputy Permanent Secretaries, Head of Independent Departments, Chief Executive Officers, Director Generals, Regional Administrative Secretaries, Directors of Local Government Authorities, District Administrative Secretaries, Councilors, Deputy Councilors)
		Management (Directors, Head of Units, Assistant Directors, Managers, Principals, etc)
		Technical Officers (Running resource-intensive tools i.e GIS, Programming, Analysis etc)
		Video-graphers and Multimedia
		Business line Officers (Medium resource needs - Professionals i.e Accountants, Procurement, ICT-Business Analyst, Lecturers)
		Business Support Officers (Non-resource intensive use - Secretaries, Office Assistants, Drivers etc)
		Schools (Primary, Secondary Schools – Teachers, Students etc)
43211507	Desktop computers	Political Leaders (Ministers, Regional Commissioners, District Commissioners, Speaker, Deputy Speaker, Members of Parliament)
		Executive Management (Chief Secretary, Chief Justice, Permanent Secretaries, Attorney General, Judges, Deputy Attorney General, Deputy Permanent Secretaries,



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<b>ICT HARDWARE GROUPS</b>		
<b>CODES</b>	<b>COMMODITY NAME</b>	<b>GROUPS</b>
		Head of Independent Departments, Chief Executive Officers, Director Generals, Regional Administrative Secretaries, Directors of Local Government Authorities, District Administrative Secretaries, Councilors, Deputy Councilors)
		Management (Directors, Head of Units, Assistant Directors, Managers, Principals, etc)
		Technical Officers (Running resource-intensive tools i.e GIS, Programming, Analysis etc)
		Video-graphers and Multimedia
		Business line Officers (Medium resource needs - Professionals i.e Accountants, Procurement, ICT-Business Analyst, Lecturers)
		Business Support Officers (Non-resource intensive use - Secretaries, Office Assistants, Drivers etc)
		Schools (Primary, Secondary Schools – Teachers, Students etc)
43211509	Tablet computers	Executives Tablets (Political Leaders, Executive Management)
		Note-taking/Writing Tablets (Management)
		General purpose Tablets (Business Line officers)
		Graphic Tablets (Technical Experts)
<b>CLASS: CALL MANAGEMENT SYSTEMS OR ACCESSORIES</b>		
43221504	Premise branch exchange PABX systems	Office PABX
<b>CLASS: PERSONAL COMMUNICATION DEVICES</b>		

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<b>ICT HARDWARE GROUPS</b>		
<b>CODES</b>	<b>COMMODITY NAME</b>	<b>GROUPS</b>
43191511	IP Phone	Executive
		Operator
		Basic
43191501	Mobile phones	Executive iPhones
		Executive Smartphones
		Basic iPhones
		Basic Smartphones
		Basic phones
43191515	Speaker phone	Group Videoconference Tool
<b>CLASS: COMPUTER DISPLAYS</b>		
43211905	Organic Light Emitting Displays	Monitor screen 27 inches

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**2.1.1 Hardware Specifications**

**Class: 43211500**  
**Name: Servers**

Code: 43211501 **Servers**

- ✧ Standard Server
- ✧ Mid-range Server

Code: 43211502 **High-end Servers**

- ✧ High-end Server

**SPECIFICATIONS**

Code: 43211501 **Servers**

**Standard Server**

Features	Minimum Specification
Processor speed	1 processor socket latest Intel® Xeon® processor, 6 cores@ 2.3GHz , Must support Hyper Threading
Memory(RAM)	64GB of DDR4 Supports up to 3TB
Expansion Slots	PCIe 3.0 x 4
Internal Storage Capacity	Supported drivers: 24 SFF hot-plug drive model with Universal Media Bay Configuration: Hot plug SFF SAS/SATA hot plug SFF Minimum Hard Disk Drive: 5 x 1.2TB Hot Plug SFF HDD ,15K RPM
Network Controller	Embedded 4x1GbE Network Adapter
Ports	Front USB management port Rear and front VGA 1 front and 2 rear USB 3.0 ports 1 x USB 3.0 internal port 8 Gb FC HBA dual ports with SFP
Form Factor	Rack Mountable(2U)
Support software, and configuration utilities	Include Server managements manufacturers packs
Power Supply Unit	2 redundant power supply 500W Input: 220 - 240 V AC

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Operation System	No need for pre-installed operating system but the servers should support major OS including UNIX/LINUX/MS Windows.
Security Management	Remote Access Management Engine, Insight Control, UEFI System Utilities Support with Enterprise license Chassis intrusion detection option, configurable for PCI DSS compliance, Advanced Encryption Standard (AES) and Triple Data Encryptions Standard(3DES) on browser, Bezel Locking kit, Tamper-free updates -components Digitally signed and verified Secure Recovery - recover critical firmware to known good state on detection of compromised firmware, Ability to rollback firmware.
Fans	Redundant hot-plug system fans
Warranty	3/3/3 years of parts, labor, on-site support with next business day response
Other features	Multi-port connectivity, Standard Rail Kit, Cable manager

**SPECIFICATIONS**

**Mid-range Server**

Features	Minimum Specification
Processor speed	2 processor sockets latest Intel® Xeon® processor, 32 cores@ at least 2.5 GHz, Must support Hyper Threading
Memory(RAM)	At least 256GB of DDR4
Expansion Slots	PCIe 4.0 x 8
Internal Storage Capacity	Supported drivers: 24 SFF hot-plug drive model with Universal Media Bay Configuration: Hot plug SFF SATA 6G Mixed Use SFF SC Multi-Vendor SSD Minimum Hard Disk Drive: 5 x 1.92 TB Hot Plug SFF HDD
Network Controller	4 x 1GbE; Embedded 4x1GbE Network Adapter 2 -Port 10G Ethernet Network Card with accessories
Interfaces	Front USB management port Rear and front VGA 1 front and 2 rear USB 3.0 ports 1 x USB 3.0 internal port 32 Gb FC HBA dual ports with SFP
Form Factor	Rack mountable
Support software, and configuration utilities	Include Server managements manufacturers packs

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Power Supply Unit	2 redundant power supply 500W Input: 220 - 240 VAC
Operation System	No need for pre-installed operating system but the servers should support major OS including UNIX/LINUX/MS Windows.
Security Management	Remote Access Management Engine, Insight Control, UEFI System Utilities Support with Enterprise license Chassis intrusion detection option, configurable for PCI DSS compliance, Advanced Encryption Standard (AES) and Triple Data Encryptions Standard(3DES) on browser, Bezel Locking kit, Tamper-free updates -components Digitally signed and verified Secure Recovery - recover critical firmware to known good state on detection of compromised firmware, Ability to rollback firmware.
Fans	Hot plug with N+1 redundancy
Warranty	3/3/3 years of parts, labor, on-site support with next business day response
Other features	Multi-port connectivity, Standard Rail Kit, Cable manager

**SPECIFICATIONS**

Code: 43211502 **High-end Servers**

**High-end Server**

Features	Minimum Specification
Processor speed	Processor (x4) four Intel® Xeon® Gold 32 cores@3.8GHz, Must support Hyper Threading
Memory (RAM)	At least 1TB of DDR4
Expansion Slots	PCIe 5.0 x 16
Internal Storage Capacity	Supported drivers: 24 SFF hot-plug drive model with Universal Media Bay Configuration: Hot plug SFF 4x480GB SATA 6G Mixed Use SFF SC Multi-Vendor SSD Minimum Hard Disk Drive: 2 x 600GB Hot Plug SFF disk
Network Controller	4 x 1GbE; Embedded 4x1GbE Network Adapter 2 -Port 10G Ethernet Network Card with accessories
Interfaces	Front USB management port Rear and front VGA 1 front and 2 rear USB 3.0 ports 1 x USB 3.0 internal port 64 Gb FC HBA dual ports with SFP
Form Factor	Rack mountable
Support software, and	Include Server managements manufacturers packs

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configuration utilities	
Power Supply Unit	(x2) 1600W Platinum Plus hot plug power supply kit Common Slot
Operation System	No need for pre-installed operating system but the servers should support major OS including UNIX/LINUX/MS Windows.
Security Management	Remote Access Management Engine, Insight Control, UEFI System Utilities Support with Enterprise license Chassis intrusion detection option, configurable for PCI DSS compliance, Advanced Encryption Standard (AES) and Triple Data Encryptions Standard(3DES) on browser, Bezel Locking kit, Tamper-free updates -components Digitally signed and verified Secure Recovery - recover critical firmware to known good state on detection of compromised firmware, Ability to rollback firmware.
Fans	Hot plug with N+1 redundancy
Warranty	3/3/3 years of parts, labor, on-site support with next business day response
Other features	Multi-port connectivity, Standard Rail Kit, Cable manager

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**Class:** 43222500

**Name:** Network security equipment

Code: 43222501 **Firewall network security equipment**

- ✧ Small Scale Firewall (less than 1Gbps traffic)
- ✧ Medium Scale Firewall (less than 40Gbps traffic)
- ✧ Large Scale Firewall (Greater than 40Gbps traffic)

**SPECIFICATIONS**

**Small Scale Firewalls - less than 1Gbps traffic**

<b>Features</b>	<b>Minimum Specifications</b>
Stateful Inspection Throughput (FW)	300Mbps
FW + Application Visibility and Control (AVC) + IPS Throughput	150Mbps
VPNs Throughput	100Mbps
Maximum number of new connections per second	4K
Maximum number of concurrent sessions	50K
Processor	Dual Core
DRAM	4GB
Flash	8GB
Form Factor	1RU Rack Mountable or Desktop
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating: 5% to 85% non-condensing
IP Routing	Support static routes and dynamic routing protocols such as BGP and OSPF.
Base Features	Stateful inspection, Access control, NAT, VPN
Threat Prevention	
High Availability and Clustering	Support active/active or active standby HA Clustering (Optional)
Virtual System/Contexts (base) (Optional)	1
Power	Power Supply 40W AC AC input voltage - 90-240V AC

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	AC frequency - 50 to 60 Hz
System Management	Terminal Access services such as console port login – RJ45, Mini-USB for console (Optional), telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP USB Port 2.0 Out-of-band management port
Warrant, License and Support	Minimum 12 months

**SPECIFICATIONS**

**Medium Scale Firewalls - less than 40Gbps traffic**

<b>Features</b>	<b>Minimum Specifications</b>
Stateful Inspection Throughput (FW)	20Gbps
FW + Application Visibility and Control (AVC) + IPS Throughput	6Gbps
VPNs Throughput	5.5 Gbps
Maximum number of new connections per second	64K
Maximum number of concurrent sessions	4M
Processor	Quad Core
DRAM	16GB
Flash	8GB
Form Factor	1 – 4 RU Rack Mountable
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating: 5% to 85% non-condensing
IP Routing	Support static routes and dynamic routing protocols such as BGP and OSPF.
Base Features	Stateful inspection, Access control, NAT, VPN



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Threat Prevention	URL filtering, antivirus, anti-spyware, file blocking, ssl decryption, advanced malware analysis, IPS/IDS and Application Visibility and Control (AVC). Machine learning and behavioral analysis capabilities.
High availability and Clustering	Support active/active or active/standby HA Clustering (Optional)
Virtual System/Contexts (base)	10
Power	Dual Power Inputs in N+1 Mode Hot-pluggable
System Management	Terminal Access services such as console port login – RJ45, Mini-USB for console (Optional), telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP USB Port 2.0 Out-of-band management port
Warrant, License and Support	Minimum 3 years

**SPECIFICATIONS**

**Large Scale Firewalls - greater than 40Gbps traffic**

<b>Features</b>	<b>Minimum Specifications</b>
Stateful Inspection Throughput (FW)	50Gbps
FW + Application Visibility and Control (AVC) + IPS Throughput	27Gbps
VPNs Throughput	20Gbps
Maximum number of new connections per second	370K
Maximum number of concurrent sessions	30M
Processor	Quad Core
DRAM	32GB
Flash	8GB
Form Factor	Rack Mountable

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Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating: 5% to 85% non-condensing
IP Routing	Support static routes and dynamic routing protocols such as BGP and OSPF.
Base Features	Stateful inspection, Access control, NAT, VPN
Threat Prevention	URL filtering, antivirus, anti-spyware, file blocking, ssl decryption, advanced malware analysis, IPS and Application Visibility and Control (AVC). Machine learning and behavioral analysis capabilities.
High availability and Clustering	Support active/active or active/standby HA Clustering (Optional)
Virtual System/Contexts (base)	10
Power	Dual Power Inputs in N+1 Mode Hot-pluggable PSUs
System Management	Terminal Access services such as console port login – RJ45, Mini-USB for console (Optional), telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP USB Port 2.0 Out-of-band management port
Warrant, License and Support	3/3/3 years of parts, labor, on-site support with next business day response

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**Class:** 43222600

**Name:** Network service equipment

**Code:** 43222612 **Network Switches**

- ✧ Access switches
- ✧ Core Switches
- ✧ Distribution Switches
- ✧ Datacenter switches

**Code:** 43222609 **Network Routers**

- ✧ Small Office/Home Office (SOHO)
- ✧ Edge Routers (Branch Routers)
- ✧ Service Aggregation Routers
- ✧ Service Provider Routers

**Code:** 43222640 **Wireless access point**

- ✧ Small Scale (less than 25 users)
- ✧ Medium Scale (less than 500 users)
- ✧ Large Scale (Grater than 500 users)

**Code:** 43222615 **Storage Area Network SAN Switches**

- ✧ SAN Switches

**Code:** 43222634 **Network management or monitoring device**

- ✧ Secure Network Server Appliances

**SPECIFICATIONS**

**Code:** 43222612 **Network Switches**

**Access Switches**

<b>Feature</b>	<b>Minimum Specification</b>
Switching Fabric	Switching capacity (Gbit/s) - 56 Forwarding Performance (Mpps) - 40
Central Processing Unit (CPU)	CPU Main frequency (GHz) - 1.2 Number of cores - 4
Flash	4GB
DRAM	2GB
Power	Power Supply 600W AC AC input voltage - 100-240V AC AC maximum input current - < 6A at 100V AC maximum output power - 400W AC frequency - 50 to 60 Hz

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	Power Over Ethernet - Power Budget 370W
Form Factor	Rack Mountable
Interfaces and Modules	8 × 10/100/1000Base-T Ethernet ports – 8 ports 16 × 10/100/1000Base-T Ethernet ports – 16 ports 24 × 10/100/1000Base-T Ethernet ports – 24 ports 48 × 10/100/1000Base-T Ethernet ports – 48 ports Modules or Fixed Uplinks 4 × 1 Gig SFP+ 4 × 10 Gig SFP+
Fans	Fixed and Redundant
VLANs and MAC Addresses	Total Number MAC Entries : 16K VLAN IDs : 1024
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating: 5% to 90% non-condensing
System Management	Terminal Access services such as console port login, telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP Mini-USB for console (Optional) USB Port 2.0
Security and Management	Hierarchical User management and password protection DOS, ARP, ICMP Attack defense Port Isolation, Port-Security and Sticky MAC IEEE 802.1X Port-Based Authentication RADIUS and TACACS authentication for login users
Warrant, License and Support	Minimum 12 Months

**SPECIFICATIONS**

**Distribution Switches**

Feature	Minimum Specification
Switching Fabric	Switching capacity (Tbit/s) – 2.4

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	Forwarding Performance (Mpps) – 480
VLANs and MAC Addresses	Total Number MAC Entries : 64K VLAN IDs : 4094
Form Factor	Rack Mountable
Fan	Redundant Fans in N+1 Mode
IP Routing	IPv4 Dynamic Routing Protocols – IS-IS, BGP, OSPF, RIPv2 IPV6 Dynamic Routing Protocols – OSPFv3, IS-ISv6, BGPv6, RIPv6
Multicast	IGMPv1/v2/v3 IGMP v1/v2/v3 Snooping PIM-DP, PIM-SM, PIM-SSM MSDP and MBGP
Enterprise QoS	Traffic Classification based on Layer 2 to 4 Protocols 802.1p priority Queuing Algorithms such as PQ,WRR,DRR Congestion Avoidance mechanisms such as WRED Traffic Shaping
Power	Dual Power Inputs in N+1 Mode Hot-Pluggable PSUs
Interfaces and Modules	Modular Line Cards with 10/40G Ports
System Management	Terminal Access services such as console port login, telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP Mini-USB for console (Optional) USB Port 2.0
Security and Management	Hierarchical User management and password protection DOS, ARP, ICMP Attack defense Port Isolation, Port-Security and Sticky MAC RADIUS and TACACS authentication for login users MACsec Remote Network Monitoring (RMON)
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C)

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	Relative humidity operating and non-operating: 5% to 90% non-condensing
Warrant, License and Support	3/3/3 years of parts, labor, on-site support with next business day response

**SPECIFICATIONS**

**Core Switches**

Features	Minimum Specifications
Switching Fabric	Switching Capacity (Tbit/s) – 19.2 Forwarding Performance (Mpps) – 14,400
Form Factor	Modular (Chassis) or Fixed
Fan	Redundant Fans in N+1 Mode
Power	Dual Power Inputs in N+1 Mode Hot-Pluggable PSUs
VLANs and MAC Addresses	Total Number MAC Entries : 256K VLAN IDs : 4094
Interfaces and Modules	Modular Line Cards with 10/40/100G Ports
IP Routing	IPv4 Dynamic Routing Protocols – IS-IS, BGP, OSPF, RIPv2 IPv6 Dynamic Routing Protocols – OSPFv3, IS-ISv6, BGPv6, RIPng
Multicast	IGMPv1/v2/v3 IGMP v1/v2/v3 Snooping PIM-DP, PIM-SM, PIM-SSM MSDP and MBGP
MPLS	Basic MPLS Functions MPLS TE MPLS L3 VPN VPLS
Enterprise QoS	Traffic Classification based on Layer 2 to 4 Protocols 802.1p priority Queuing Algorithms such as PQ,WRR,DRR Congestion Avoidance mechanisms such as WRED Traffic Shaping
System Management	Terminal Access services such as console port login, telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through

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	FTP/TFTP/SFTP/SCP Mini-USB for console (Optional) USB Port 2.0
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating: 5% to 90% non-condensing
Security and Management	Hierarchical User management and password protection DOS, ARP, ICMP Attack defense Port Isolation, Port-Security and Sticky MAC RADIUS and TACACS authentication for login users MACsec Remote Network Monitoring (RMON)
Warrant, License and Support	3/3/3 years of parts, labor, on-site support with next business day response

**SPECIFICATIONS**

**Datacenter Switches**

Features	Minimum Specifications
Switching Fabric	Switching Capacity (Tbit/s) – 3.6 Forwarding Performance (Mpps) – 954
Form Factor	Modular (Chassis) or Fixed
Fan	Redundant Fans in N+1 Mode
Power	Dual Power Inputs in N+1 Mode Hot-Pluggable PSUs
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating: 5% to 90% non-condensing
IP Routing	IPv4 Dynamic Routing Protocols – IS-IS, BGP, OSPF, RIPv2 IPV6 Dynamic Routing Protocols – OSPFv3, IS-ISv6, BGPv6, RIPng
Multicast	IGMPv1/v2/v3 IGMP v1/v2/v3 Snooping

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	PIM-DP, PIM-SM, PIM-SSM MSDP and MBGP
Network Virtualization	VXLAN BGP EVPN QinQ Access VXLAN
Datacenter Interconnect (DCI)	VXLAN Mapping, Implementing Interconnection between Multiple DCI networks at Layer 2
Enterprise QoS	Traffic Classification based on Layer 2 to 4 Protocols 802.1p priority Queuing Algorithms such as PQ,WRR,DRR Congestion Avoidance mechanisms such as WRED Traffic Shaping
System Management	Terminal Access services such as console port login, telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP Mini-USB for console (Optional) USB Port 2.0
Security and Management	Hierarchical User management and password protection DOS, ARP, ICMP Attack defense Port Isolation, Port-Security and Sticky MAC RADIUS and TACACS authentication for login users MACsec Remote Network Monitoring (RMON)
Warrant, License and Support	3/3/3 years of parts, labor, on-site support with next business day response

**SPECIFICATIONS**

Code: 43222609 **Network Routers**

**Small Office/Home Office (SOHO) Routers**

Features	Minimum Specifications
Aggregate Throughput	5Mbps
Form Factor	Fixed



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Fan	Built-In Fans
DRAM	1Gbps
Flash	1Gbps
Power	Fixed
LTE Support	Multichannel-Interface-Processor (MIP) profile configuration Remotely initiated data callback using voice Remotely initiated data callback using Short Message Service (SMS) Remote firmware upgrade over LTE SIM lock and unlock capabilities
Embedded Switch features	MAC filtering Secure MAC address vlans
Wireless Technologies Supported	LTENA, LTEGB, LTEAU: UMTS, HSPA+ (Band 1, 5, 8), EDGE, GSM, GPRS (900/1800) LTEAS: UMTS, HSPA+ (Band 1, 8), EDGE, GSM, GPRS (900/1800)
Management	Telnet, Simple Network Management Protocol Version 3 (SNMPv3), Secure Shell (SSH) Protocol, Command-Line Interface (CLI), and HTTP management
Warrant, License and Support	Minimum 12 Months

**SPECIFICATIONS**

**Edge Routers**

Features	Minimum Specifications
Aggregate Throughput	50Mbps
Form Factor	Rack Mountable
Flash	2GB
DRAM	2GB
Fan	Built-In Fan modules
Power	Power Supply Fixed AC input voltage - 100–240V AC AC maximum input current - < 6A at 100V AC maximum output power - 400W AC frequency - 50 to 60 Hz
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating:

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	5% to 85% non-condensing
IP Routing	Static Routing IPv4 Dynamic Routing Protocols – IS-IS, BGP, OSPF, RIPv2 IPV6 Dynamic Routing Protocols – OSPFv3, IS-ISv6, BGPv6, RIPng
Multicast	IGMPv1/v2/v3 IGMP v1/v2/v3 Snooping PIM-DP, PIM-SM, PIM-SSM MSDP and MBGP
VPN	GRE IPsec VPN Virtual Routing and Forwarding (VRF)
Security	ACLs v4/v6, firewalling, Radius and TACACS Authentication. PKI, Broadcast storm security, ARP Security, ICMP Attack defense.
SD-WAN Ready	Building Cost effective and business friendly connection over any transport – Internet, MPLS or 4G LTE Application Identification and link quality based traffic steering End to End IPsec encryption, ensuring secure service transmission
QoS	Classification and Marking Congestion Management Congestion Avoidance Policing and Shaping
System Management	Terminal Access services such as console port login, telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP Mini-USB for console (Optional) USB Port 2.0 Remote Network Monitoring (RMON)
Warrant, License and Support	Minimum 12 months

**SPECIFICATIONS**

**Service Aggregation Routers**

Features	Minimum Specifications
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Aggregate Throughput	2.5Gbps
Form Factor	Rack Mountable
Flash	2GB
DRAM	4GB
Fan	Built-In Fan modules
Power	Dual Power Inputs in N+1 Mode Hot-pluggable or Fixed
Main Control Unit (RPs/MPUs)	Redundant for Fault tolerance
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating: 5% to 85% non-condensing
IP Routing	Static Routing IPv4 Dynamic Routing Protocols – IS-IS, BGP, OSPF, RIPv2 IPV6 Dynamic Routing Protocols – OSPFv3, IS-ISv6, BGPv6, RIPng
Multicast	IGMPv1/v2/v3 IGMP v1/v2/v3 Snooping PIM-DP, PIM-SM, PIM-SSM MSDP and MBGP
VPN	GRE IPsec VPN Virtual Routing and Forwarding (VRF)
Security	ACLs v4/v6, firewalling, Radius and TACACS Authentication. PKI, Broadcast storm security, ARP Security, ICMP Attack defense.
SD-WAN Ready	Building Cost effective and business friendly connection over any transport – Internet, MPLS or 4G LTE Application Identification and link quality based traffic steering End to End IPsec encryption, ensuring secure service transmission
QoS	Classification and Marking Congestion Management Congestion Avoidance Policing and Shaping
System Management	Terminal Access services such as console port login, telnet and SSH

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	Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP Mini-USB for console (Optional) USB Port 2.0 Remote Network Monitoring (RMON)
Warrant, License and Support	3/3/3 years of parts, labor, on-site support with next business day response

**SPECIFICATIONS**

**Service Provider Routers**

Features	Minimum Specifications
Aggregate Throughput	16 Tbps
Form Factor	Rack Mountable
Fan	Built-In Fan modules
Power	Dual Power Inputs in N+1 Mode Hot-pluggable or Fixed
Main Control Unit (RPs/MPUs)	Redundant for Fault tolerance
Environmental Parameters	Storage temperature: -40° to 158°F (-40° to 70°C) Operating temperature: - 32 to 104°F (0 to 40°C) Relative humidity operating and non-operating: 5% to 85% non-condensing
IP Routing	Static Routing IPv4 Dynamic Routing Protocols – IS-IS, BGP, OSPF, RIPv2 IPV6 Dynamic Routing Protocols – OSPFv3, IS-ISv6, BGPv6, RIPng
Multicast	IGMPv1/v2/v3 IGMP v1/v2/v3 Snooping PIM-DP, PIM-SM, PIM-SSM MSDP and MBGP
Service Providers Features	MPLS, LDP, MPLS TE, MPLS VPN, MPLS FRR Segment Routing v4 Segment Routing v6 (SRv6) Virtual Routing and Forwarding (VRF)
VPN	EVPN VXLAN
Security	ACLs v4/v6, firewalling, Radius and TACACS

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	Authentication. PKI, Broadcast storm security, ARP Security, ICMP Attack defense.
QoS	Classification and Marking Congestion Management Congestion Avoidance Policing and Shaping
System Management	Terminal Access services such as console port login, telnet and SSH Network Management Protocols such as SNMP v1/v2/v3 File uploading and downloading through FTP/TFTP/SFTP/SCP Mini-USB for console (Optional) USB Port 2.0 Remote Network Monitoring (RMON)
Warrant, License and Support	3/3/3 years of parts, labor, on-site support with next business day response

**SPECIFICATIONS**

Code: 43222640 **Wireless access point**

**Small Scale (less than 25 users)**

<b>Features</b>	<b>Minimum Specifications</b>
Wireless standard	802.11a/b/g/n/ac Support 802.11ac Wave 2 with below features <ul style="list-style-type: none"> <li>• Support 160 MHz channel widths</li> <li>• Supports up to eight spatial streams</li> <li>• Support SU-MIMO and MU-MIMO technologies</li> <li>• Support for multi-user beamforming and wider frequency channels</li> </ul>
Frequency bands	2.4 GHz and 5 GHz
Maximum data rates	3.5 Gbps (2.4 Gbps on 5 GHz and 1.1 Gbps on 2.4 GHz)
MIMO radio chain	4x4:4 on 5 GHz and 3x3:3 on 2.4 GHz
Client count	25 clients per AP
Antenna options	Internal antennas, external antenna support with optional module
Power over Ethernet (PoE) support	802.3at PoE+ and 802.3af PoE
Ethernet ports	10/100/1000BASE-T autosensing (RJ-45)

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Security	WPA2, 802.1X, AES encryption, rogue access point detection
Management	Stand alone or Controller based
Warrant, License and Support	Minimum 12 Months

**SPECIFICATIONS**

**Medium Scale (less than 500 users)**

<b>Features</b>	<b>Minimum Specifications</b>
Wireless standard	802.11a/b/g/n/ac Support 802.11ac Wave 2 with below features <ul style="list-style-type: none"> <li>• Support 160 MHz channel widths</li> <li>• Supports up to eight spatial streams</li> <li>• Support SU-MIMO and MU-MIMO technologies</li> <li>• Support for multi-user beamforming and wider frequency channels</li> </ul>
Frequency bands	2.4 GHz and 5 GHz
Maximum data rates	5.2 Gbps (2.4 Gbps on 5 GHz and 1.8 Gbps on 2.4 GHz)
MIMO radio chain	4x4:4 on 5 GHz and 3x3:3 on 2.4 GHz
Client count	200 clients per AP
Antenna options	Internal antennas, external antenna support with optional module
Power over Ethernet (PoE) support	802.3at PoE+ and 802.3af PoE
Ethernet ports	10/100/1000BASE-T autosensing (RJ-45)
Security	WPA2, 802.1X, AES encryption, rogue access point detection
Management	Stand alone or Controller based
Warrant, License and Support	Minimum 12 Months

**SPECIFICATIONS**

**Large Scale (Greater than 500 users)**

<b>Features</b>	<b>Minimum Specifications</b>
Wireless standard	802.11a/b/g/n/ac/ax Support 802.11ax with below features <ul style="list-style-type: none"> <li>• Support 160 MHz channel widths</li> <li>• Supports up to 12 spatial streams</li> <li>• Support MIMO and OFDMA technologies</li> </ul>

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	<ul style="list-style-type: none"> <li>Support for multi-user beamforming and wider frequency channels</li> </ul>
Frequency bands	2.4 GHz and 5 GHz
Maximum data rates	5.4 Gbps (4.8 Gbps on 5 GHz and 600 Mbps on 2.4 GHz)
MIMO radio chain	4x4:4 on 5 GHz and 3x3:3 on 2.4 GHz
Client count	500 clients per AP
Antenna options	Internal antennas, external antenna support with optional module
Power over Ethernet (PoE) support	802.3at PoE+ and 802.3af PoE
Ethernet ports	10/100/1000BASE-T autosensing (RJ-45)
Security	WPA2, WPA3, 802.1X, AES encryption, rogue access point detection, MAC Address filtering
Management	Stand alone or Controller based
Warrant, License and Support	Minimum 12 Months

Code: 43222615 **Storage Area Network SAN Switches**  
**SAN Switches**

Features	Minimum Specifications
Protocol supported	Fibre Channel
Port speed	32 Gb/s Fibre Channel
Number of ports	(16) Fibre Channel 16 Active
Aggregate bandwidth switch	192 Gbps: 24 ports X 8 Gbps (data rate)
Availability features	Hot code load. Ports on demand with no downtime
Form factor	1U
Scalability	Full fabric architecture with 239 switches maximum
Media type technology	B-series 4 Gb and 8 Gb SFPs
Power	Internal power supply – Redundant PSUs Voltage Required AC 120/230 V (50/60 Hz)
Environmental Parameters	Storage temperature: -25°C to 70°C (-13°F to 158°F) Operating temperature: 0°C to 40°C (32°F to 104°F) Relative humidity: Operating: 10% to 85% non-

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	condensing, non-operating and storage: 10% to 95% non-condensing
System Management	<p><b>Access:</b> 10/100 Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45) and USB.</p> <p><b>Management Software:</b> HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), Telnet; Auditing, Change Management tracking, command line interface; SMI-S compliant; Administrative Domains; trial licenses for add-on capabilities.</p> <p><b>Security:</b> DH-CHAP (between switches and end devices), HTTPS, IPsec, IP Filtering, LDAP, Port Binding, RADIUS, Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SSH v2, SSL, Switch Binding and Trusted Switch.</p> <p><b>Diagnostic:</b> POST and embedded online/offline diagnostics, including RAStace logging, environmental monitoring, non-disruptive daemon restart, FCping and Pathinfo (FC traceroute), port mirroring (SPAN port).</p>
Warrant, License and Support	3/3/3 years of parts, labor, on-site support with next business day response Perpetual License for all base features



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Code: 43222634 **Network management or monitoring device**  
**Secure Network Server Appliance**

Features	Minimum Specifications
Processor	Intel 4310, 2.1GHz
Cores per processor	12 Cores and 24 Threads
Memory	32GB (2 X 16GB)
Hard disk	60012G SAS 10K RPM SFF HDD Or 800GB 2.5in Enterprise Performance 12G SAS SSD (3X endurance) Or 960GB 2.5 in Enterprise value SATA SSD Self Encrypted Drive (1X, SED)
Hardware RAID	Level 0
Network interface	2 X 10Gbase-T, 4 X 10GE SFP
Power supplies	2 X 770W
TPM chip	Yes
Warranty	Warranty 36 months.

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**Class:** 43201800  
**Name:** Media Storage Devices

Code: 43201802 **Hard Disk arrays**

- ✧ Standard Storage
- ✧ Standard Storage Extended
- ✧ Medium Storage
- ✧ Medium Storage Extended
- ✧ High-end Storage

**SPECIFICATIONS**

**Standard Storage**

<b>Features</b>	<b>Minimum Specification</b>
Capacity	5 TB
Drive types	SFF hard-disk drive (HDD)
Form factor	2U rack-mounted
Connectivity	Dual 1 GbE Ethernet and dual 8 Gb Fibre Channel
RAID support	RAID 0 or 1
Performance	Up to 5,000 IOPS and 100 MB/s throughput
Data protection	Basic backup and recovery capabilities
Management	Web-based management interface with SNMP support
Warranty	3 years of parts replacement, labour, and remote and onsite support (and must have spares available in-country)

**Standard Storage Extended**

<b>Features</b>	<b>Minimum Specification</b>
Capacity	20 TB
Drive types	SFF hard-disk drive (HDD)
Form factor	2U rack-mounted
Connectivity	Dual 1 GbE Ethernet and dual 8 Gb Fibre Channel
RAID support	RAID 0, 1, 5, 6, 10
Performance	Up to 100,000 IOPS and 1 GB/s throughput
Data protection	Basic backup and recovery capabilities
Management	Web-based management interface with SNMP support

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Warranty	3 years of parts replacement, labour, and remote and onsite support (and must have spares available in-country)
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**SPECIFICATIONS**

**Medium Storage**

Features	Minimum Specification
Capacity	50 TB
Drive types	SFF hard-disk drive(HDD) or SSDs
Form factor	4U rack-mounted
Connectivity	Dual 10 GbE Ethernet, dual 8 Gb Fibre Channel, or iSCS
RAID support	RAID 0, 1, 5, 6, 10, 50, or 60
Expansion options	Up to 12 additional drives
Performance	Up to 500,000 IOPS and 5 GB/s throughput
Data protection	Advanced data protection features such as snapshots, replication, and data-at-rest encryption
Management	Comprehensive web-based management interface with advanced analytics, monitoring, and alerting.
Scalability	Highly scalable with the ability to cluster multiple arrays together for increased capacity and performance.
Warranty	3 years of parts replacement, labour, and remote and onsite support (and must have spares available in-country)

**SPECIFICATIONS**

**Medium storage Extended**

Features	Minimum Specification
Capacity	100 TB
Drive types	SFF hard-disk drive (HDD) or SSDs
Form factor	2U or 3U rack-mounted
Connectivity	Dual 10 GbE or 25 GbE Ethernet, dual 16 Gb or 32 Gb Fibre Channel, or InfiniBand
RAID support	RAID 0, 1, 5, 6, 10, 50, or 60
Expansion options	Up to 12 additional drives
Performance	Up to 1,000,000 IOPS and 10 GB/s throughput
Data protection	Advanced data protection features such as snapshots, replication, and data-at-rest encryption

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Management	Comprehensive web-based management interface with advanced analytics, monitoring, and alerting.
Scalability	Highly scalable with the ability to cluster multiple arrays together for increased capacity and performance.
Warranty	3 years of parts replacement, labour, and remote and onsite support (and must have spares available in-country)

**SPECIFICATIONS**

**High-end storage Extended**

Features	Minimum Specification
Capacity	200 TB
Drive types	SFF hard-disk drive (HDD)
Form factor	Multiple racks or a custom enclosure
Connectivity	Dual 25 GbE Ethernet, dual 32 Gb Fibre Channel, or InfiniBand
RAID support	RAID 0, 1, 5, 6, 10, 50, or 60
Expansion options	Up to 12 additional drives
Performance	Up to several million IOPS and hundreds of GB/s throughput
Data protection	Advanced data protection features such as multi-level snapshots, replication, and data-at-rest encryption.
Management	Comprehensive web-based management interface with advanced analytics, monitoring, and alerting, as well as API support for automation and orchestration.
Scalability	Highly scalable with the ability to cluster multiple arrays together for increased capacity and performance, as well as tiered storage options for integrating with cloud storage or object storage.
Warranty	3 years of parts replacement, labour, and remote and onsite support (and must have spares available in-country)

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**Class: 43212100**  
**Name: Printers**

Code: 43212103 **Publications and offset printers**

- ✧ Newspapers
- ✧ Books and Journals

Code: 43212104 **Wide format printers**

- ✧ Billboards
- ✧ Posters, signage, banners and tarpaulin

Code: 43212105 **Office Shared and Digital image Printers**

- ✧ Small Scale Users (Less 20 users)
- ✧ Medium Scale Users (20 - 50)
- ✧ Large Scale Users (More than 50)
- ✧ PVC (ID) Card Printers
- ✧ Executive Printers (Coloured)
- ✧ Secretarial Printers

Code: 43212107 **Technical Drawing Printers**

- ✧ Maps and Geospacial data
- ✧ Blueprints
- ✧ 3D

Code: 43212109 **Tags and labels Printer**

- ✧ Shipping labels printer
- ✧ Luggage and Bag tags printer
- ✧ Barcodes printer

Code: 43212111 **Airline Ticketing and Boarding Pass Printer**

- ✧ Airline ticket printer
- ✧ Boarding pass printer

Code: 43212112 **POS receipt Printers**

- ✧ Point of Sales

Code: 43212113 **Textile Industry printers**

- ✧ Textiles printer
- ✧ Tiles printer
- ✧ Clothing printer

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Code: 43212105 **Office Shared and Digital image Printers**

- ✧ Small Scale Users (Less 20 users)
- ✧ Medium Scale Users (20 - 50)
- ✧ Large Scale Users (More than 50)
- ✧ Large Scale Users Colored (More than 50)
- ✧ PVC (ID) Card Printers
- ✧ Executive Printers (Colored)
- ✧ Secretarial Printers

**SPECIFICATIONS**

Code: 43212105 **Office Shared and Digital image Printers**

<b>Category</b>	<b>Minimum Specification</b>
Executive Printers	<p>Type: Color Printer</p> <p>Functions: Print (Black/Normal and Colored), copy, scan and fax.</p> <p>Memory: Standard: 512 MB</p> <p>Print speed: Up to 28 ppm.</p> <p>Printer page yield: First page out (ready) black/color: As fast as 9.5 sec Resolution (black/color): Up to 600 x 600 dpi</p> <p>Print Technology: Laser</p> <p>Display: 3.5" touchscreen Color Graphic Display (CGD) Processor speed: 800MHz Paper trays: at least 2</p> <p>Connectivity: Mobile printing capability, HP ePrint, wireless direct printing</p> <p>Network Connectivity: Standard (built-in Fast Ethernet)</p>

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	<p>Ports: 1Hi-Speed USB 2.0; 1 Fast Ethernet; 1 Host USB</p> <p>Security: Embedded Web Server: password-protection, secure browsing via SSL/TLS; SNMPv1 community password change; ePrint: HTTPS with certificate validation, HTTP Basic Access Authentication, SASL authentication; LDAP authentication and authorization; Firewall and ACL; SNMPv3</p> <p>Minimum system requirements: Supports all OS Platforms; dedicated universal serial bus (USB 1.1 or 2.0 or 3.0) or Wired/Wireless connection;</p> <p>Paper handling input: Standard, 50-sheet multipurpose tray, 250-sheet input tray, 50-sheet Automatic Document Feeder (ADF)</p> <p>Paper handling output: Standard 150-sheet output bin Duplex printing: Automatic (standard)</p> <p>Media sizes supported: Letter, legal, executive, 8.5 x 13 in, 3 x 5 in, 4 x 6 in, 5 x 8 in, envelopes (No 10, Monarch); A4, A5, A6, B5 (JIS), 16K, 10 x 15 cm, postcards (JIS single, JIS double), envelopes (ISO DL, ISO C5, ISO B5);</p> <p>Media types: Paper (bond, brochure, colored, glossy, letterhead, photo, plain, preprinted, prepunched, recycled, rough), postcards, transparencies, labels, envelopes</p> <p>1.2 Scanner specifications: Scanner type: Flatbed; ADF</p> <p>Scan file format: PDF, searchable PDF, JPG, RTF, TXT, BMP, PNG, TIFF</p> <p>Scan resolution, hardware: Up to 300 x 300 dpi (color and mono ADF); up to 300 x 300 dpi, 600 x 600 dpi, 1200 x 1200 dpi (Flatbed)</p>
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	<p>Scan resolution, optical: Up to 300 x 300 dpi (color and mono ADF); up to 300 x 300 dpi, 600 x 600 dpi, 1200 x 1200 dpi (Flatbed)</p> <p>Scan size (flatbed), maximum: 8.5 x 11.7 in  Scan size (ADF), maximum: 8.5 x 14 in</p> <p>Duplex ADF scanning: Yes, single-pass duplexing ADF  ADF Capacity: Standard, 50 sheets</p> <p>Digital sending features: Scan to email; Scan to folder; LDAP authentication</p> <p>Digital send file Formats: PDF; JPG</p> <p>1.3 Copier:  Copy speed (normal): Up to 21 cpm  Copy resolution: 300 x 420 dpi (Flatbed); 300 x 360 dpi (ADF)  Copy reduce / enlarge settings: 25 to 400%</p> <p>1.4 Faxing:  Fax: Yes  Fax transmission speed: 3 second per page  Fax memory: Up to 250 pages  Fax resolution: Up to 300 x 300 dpi</p> <p>1.5 Power &amp; operating</p> <p>Power: 220-volt input voltage: 220 to 240 VAC (+/- 10%), 50 Hz (+/- 3 Hz)</p> <p>Power consumption: 397 watts (print/copy), 17.6 watts (ready), 1.5 watts (sleep)</p> <p>1.6 Dimensions &amp; weight</p> <p>Maximum Weight: 8Kg</p> <p>Warranty 36 months.</p>
<p>Large Scale Users Printer (More than 50 users)</p>	<p>Type:  Heavy Duty Printer</p> <p>Functions:  Print/Scan/Copy/Fax  Support printing management tools e.g MyQ.</p> <p>General type</p>



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	<p>B/W Multifunctional for A4/A3 format</p> <p>Engine speed: 25 ppm B&amp;W</p> <p>Memory: Minimum: 1 GB RAM</p> <p>Hard Disk Drive (Optional): HD-6 (32 GB SSD) Electrical Requirements: 220-240V First page out Time (print/copy): As fast as 5.8 Seconds B&amp;W</p> <p>Resolution: 600 x 600 dpi ; Fine 1200 Print Technology: Laser MFP Display: 4.3" touchscreen Color Graphic Display (CGD) Maximum Monthly Duty Cycle: 80,000 Pages Per Month</p> <p>Input Capacity (std): 600 Sheets Output Capacity (std): 250 Sheets Paper Sources (std) Minimum: 1 Tray + 1 MPT</p> <p>Input Materials: Plain Paper, Recycled, Thick, Thin</p> <p>Standard Interface: 10/100/1000BaseTX, Hi- Speed USB 2.0, USB Host Interfaces, Expansion Slots</p> <p>Security: password-protection, secure browsing via SSL/TLS; IPsec; LDAP authentication and authorization; SNMPv3</p> <p>Operating System Support: All current Windows operating systems MAC OS X Version 10.5 or higher Unix, Linux as well as other operating systems on request</p> <p>Paper handling input: 250-sheet input tray, 50-sheet Automatic Document Feeder (ADF) Paper handling output: Standard 150-sheet output bin Duplex printing: Automatic (standard) Duplex ADF scanning: Yes, single-pass duplexing ADF</p>
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	<p>Copy speed (normal): Up to 21 cpm          Fax: Yes          Power: 220-volt input voltage          Maximum Weight: 8Kg</p> <p>Office Machine Features          Save to USB flash drive, scan to e-mail          Max Document Enlargement 400 %          Max Document Reduction 25 %          Automatic Duplexing          ENERGY STAR Certified          Other Accessories          Document Feeder          Printer stand          Warranty 36 months.</p>
<p>Large Scale Users          Printer Colored          (More than 50 users)</p>	<p>Type:          Heavy Duty Printer          Functions:          Print/Scan/Copy/Fax          Support printing management tools e.g., MyQ.</p> <p>General type          Print (Black/Normal and Colored)</p> <p>Engine speed:          25 ppm B&amp;W          Memory minimum: 1 GB RAM</p> <p>Hard Disk Drive (Optional): HD-6 (32 GB SSD)          Electrical Requirements:220-240V          First page out Time (print/copy): As fast as 5.8          Seconds B&amp;W</p> <p>Resolution: 600 x 600 dpi; Fine 1200          Print Technology: Laser MFP          Display: 4.3" touchscreen Color Graphic Display          (CGD)          Maximum Monthly Duty Cycle: 80,000 Pages          Per Month</p> <p>Input Capacity (std): 600 Sheets          Output Capacity (std): 250 Sheets          Paper Sources (std) Minimum: 1 Tray + 1 MPT</p> <p>Input Materials: Plain Paper, Recycled, Thick, Thin</p>

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	<p>Standard Interface: 10/100/1000BaseTX, Hi-Speed USB 2.0, USB Host Interfaces, Expansion Slots</p> <p>Security: password-protection, secure browsing via SSL/TLS; IPsec; LDAP authentication and authorization; SNMPv3</p> <p>Operating System Support: All current Windows operating systems MAC OS X Version 10.5 or higher Unix, Linux as well as other operating systems on request</p> <p>Paper handling input: 250-sheet input tray, 50-sheet Automatic Document Feeder (ADF)</p> <p>Paper handling output: Standard 150-sheet output bin</p> <p>Duplex printing: Automatic (standard)</p> <p>Duplex ADF scanning: Yes, single-pass duplexing ADF</p> <p>Copy speed (normal): Up to 21 cpm</p> <p>Fax: Yes</p> <p>Power: 220-volt input voltage</p> <p>Maximum Weight: 8Kg</p> <p>Office Machine Features</p> <p>Save to USB flash drive, scan to e-mail</p> <p>Max Document Enlargement 400 %</p> <p>Max Document Reduction 25 %</p> <p>Automatic Duplexing</p> <p>ENERGY STAR Certified</p> <p>Other Accessories</p> <p>Document Feeder</p> <p>Printer stand</p> <p>Warranty 36 months.</p>
PVC (ID) Card Printers	<p>Type: ID Card Printer</p> <p>Overview: Single or double-sided card printing Color and monochrome printing in same unit Reloadable supply cartridges with drop-in cleaning roller Automatic 100-card input hopper (with exception card slot)</p>

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	<p>Advanced printer driver; support for third-party application development  Intuitive LCD panel with soft-touch controls  Optional smart card and magnetic stripe encoding  Standard Ethernet and USB connectivity</p> <p>Operating Systems (Drivers):  Supports Windows 10 and later</p> <p>Printing Technology:  Direct-to-card, two-sided printing</p> <p>Print Speed:  Up to 195 cards/hour single sided YMCKT printing  Up to 133 cards/hour two sided YMCKT-KT printing  Up to 371 cards/hour monochrome, two sided printing (black HQ)</p> <p>Print resolution:  Standard mode: 300 x 300 dots per inch - standard text, bar code and graphics printing  High-quality mode: 300 x 600 dots per inch - enhanced text and graphics printing  300 x 1200 dots per inch - enhanced text printing</p> <p>Card Capacity:  Card input hopper capacity 100 (up to 200) Card output hopper capacity 100 Reject hopper capacity 10 original and four copies</p> <p>Connectivity Standard:  USB and Ethernet connection</p> <p>Warranty 36 months.</p>
<p>Small scale Printer  (Less 20 users)</p>	<p>Type:  B/W Printer</p> <p>Functions:  Print (Black/Normal)</p> <p>Memory:  Standard: 256 MB</p> <p>Print speed:  Up to 42 ppm.</p> <p>Printer page yield:  First page out (ready) black: As fast as 6.1 sec</p> <p>Resolution (black): Up to 1200 x 1200 dpi</p>

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	<p>Print Technology: Laser  Display: LCD Graphic Display  Processor speed: 1200MHz  Paper trays: at least 2</p> <p>Connectivity: Gigabit Ethernet 10/100/1000BASE-T network; 802.3az(EEE) 802.11b/g/n / 2.4 / 5 GHZ Wi-Fi</p> <p>Paper handling input: standard 100-sheet multipurpose Tray 1, 250-sheet input Tray 2</p> <p>Paper handling output: Standard 150-sheet output bin  Duplex printing: Automatic (standard)  Media sizes supported: 8.5 x 13 in, 3 x 5 in, 4 x 6 in, 5 x 8 in,  Media types: Paper, labels, envelopes</p> <p>Power consumption: 495 watts (print/copy), 5.5 watts (ready), 0.5 watts (sleep)</p> <p>Warranty 36 months</p>
Secretary (Personal) Printer	<p>Type:  B/W Printer  Functions:  Print (Black/Normal)  Memory:  Standard: 2 MB  Print speed:  Up to 18 ppm.  First page out (ready): As fast as 8.5 sec  Print quality black (best): Up to 600 x 600 x 2 dpi (1200 dpi effective output)  Print Technology: Laser  Processor speed: 266MHz  Duty cycle (monthly, A4): Up to 5000 pages  Standard paper trays: 1  Paper handling standard/input: 150-sheet input tray  Paper handling standard/output: 100-sheet face-down bin  Media sizes supported: A4; A5; A6; B5; postcards; envelopes (C5, DL, B5)</p>

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	<p>Media types supported: Paper (laser, plain, photo, rough, vellum), envelopes, labels, cardstock, transparencies, postcards  Standard connectivity: USB port, with Cable included  Compatible OS: Microsoft® Windows® (32-bit/64-bit), Mac OS X, Linux  Power requirements: Input voltage 220 to 240 VAC (+/- 10%), 50 Hz (+/- 2 Hz), 6.0 amp  ENERGY STAR® qualified: Yes</p> <p>Warranty: 36 months</p>
<p>Medium scale Printer</p>	<p>Type:  Multifunctional Printer</p> <p>Functions:  Print/Scan/Copy/Fax  Support printing management tools e.g., MyQ. (Recommended)</p> <p>General type  B/W Multifunctional for A4/A3 format</p> <p>Engine speed:  35 ppm B&amp;W</p> <p>Memory:  Minimum: 512 MB RAM</p> <p>First page out Time (print/copy): As fast as 6.8 Seconds  Resolution: 300, 600, 1200 dpi</p> <p>Print Technology: Laser MFP  Display: Yes</p> <p>Maximum Monthly Duty Cycle: 30,000 Pages Per Month  Input Capacity (std): 250 Sheets</p> <p>Output Capacity (std): 150 Sheets  Standard Interface: RJ 45, USB</p> <p>Operating System Support: All current OS Windows, MAC OS X, Unix, Linux</p>

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	Duplex printing: Automatic (standard) Electrical Requirements: 220-240V ENERGY STAR Certified: Yes Other Accessories Document Feeder Warranty 36 months
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**SPECIFICATIONS**

Code: 43212109 **Tags and labels Printer**

**Bar code Printer**

<b>Features</b>	<b>Minimum Specification</b>
Print Head/Nozzle	Thermal Inkjet 2.5
Battery	2600mAh@DC16.8V
Adapter	AC Input 100-240V, 50/60Hz; DC output 16.8V/2A
Voltage	110-240V
Printing Font	High-definition print font / dot matrix font
Printing Speed	70m/min
Printing height	1-12.7mm
Printing distance	Best quality with 2-5mm
Printing accuracy/resolution	300DPI Max.
Printing row number	1-4 adjustable
Printing content	Chinese, English, Text, time, batch numbers, serial number, logo, barcode, QR code, pictures, date, counter, symbols
Serial number	1-8 digits variable order
Weight	GW 0.82KG
Material of Printer	ABS+PC
Printing material/media	Boards, carton, stone, pipe, cable, metal, plastic, fiber board, electronic, automotive parts, light steel keel, aluminum foil, etc.
Ink cartridge type/capacity	Water-based/42ml, Solvent/42ml
Ink Type	Water-based
Ink color	Black, White, Red, Blue, Yellow, Green, Invisible, UV
Control panel	Intelligent touch screen
Average power consumption	AVG. <5W
External interface	USB, photoelectric interface
Storage	The system can store more than 1000 information (>1000)

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Working environment	0~38°C, 10%~90% RH
Item size/Dimension	220x130x120mm / 8.7x5.1x4.7in

**SPECIFICATIONS**

Code: 43212111 **Airline Ticketing and Boarding Pass Printer**

Airline ticket printer

<b>Features</b>	<b>Minimum Specification</b>
Printing Method	Thermal printing technology
Printing Resolution	203 or 300 dots per inch (dpi)
Printing Speed	100 to 300 millimeters per second (mm/s)
Connectivity	USB, Ethernet, or Wi-Fi
Paper Handling	Standard ticket paper sizes such as 58mm, 80mm, or 82.5mm width
Memory	4GB
Durability	Sturdy construction to withstand high volume of printing in busy airports
Compatibility	Compatible with standard airline ticketing software and systems
Power Requirements	110-220VAC
Dimensions	Varies by model, but typically compact and lightweight
Barcode Printing	1D and 2D barcode printing capability
Magnetic Stripe Encoding	Ability to encode magnetic stripes on the ticket
Automatic Cutter	Automatic cutting of tickets after printing
Auto Paper Loading	Automatic loading of new paper rolls
High-Capacity Paper Tray	Large paper tray to hold more paper rolls
LCD Display	Display of important information such as ink and paper levels, error messages, and ticket status

**Class:** 43211700

**Name:** Computer Data Input Devices

Code: 43211723 **Electronic voting or vote-counting equipment**

Code: 43211714 **Biometric identification equipment**

✧ Time and attendance tracking



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- ✧ Access Control
- ✧ Identification Control

Code: 43211712 **Graphics tablets**

- ✧ Digital signature display

Code: 43211701 **Code reader equipment**

- ✧ Barcode reader
- ✧ QR Reader

Code: 43211702 **Magnetic stripe readers**

- ✧ Swipe
- ✧ Insert

Code: 43211702 **Keyboards**

- ✧ Gaming keyboards
- ✧ Standard keyboard
- ✧ Ergonomic keyboard
- ✧ Mini Keyboard

Code: 43211726 **Digital pen**

- ✧ Light stylus
- ✧ Pressure stylus

Code: 43211708 **Computer mouse or trackballs**

- ✧ Gaming mouse
- ✧ Standard mouse
- ✧ Ergonomic mouse

Code: 43211710 **Radio frequency identification devices (RFID)**

- ✧ Gaming Radio Frequency Identification Devices (RFID)

Code: 43211711 **Scanners**

- ✧ Document scanning
- ✧ Artwork scanning
- ✧ 3D scanning: Scanners

Code: 43211713 **Signature Touch pads**

- ✧ Signature Touch Pads

Code: 43211717 **Optical character recognition systems**

Code: 43211719 **Voice microphones for computers**

- ✧ Wired
- ✧ Wireless

Code: 43211720 **Point of sale payment terminal**

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Code: 43211723 **Computer peripheral kit**

Code: 43211728 **Smart card dummy terminal**

- ✧ Access control
- ✧ Transportation
- ✧ Payment processing

Code: 43211729 **Optical mark reader**

Code: 43211802 **Mouse Pads**

**SPECIFICATIONS**

Code: 43211723 **Electronic voting or vote-counting equipment**

<b>Features</b>	<b>Minimum specifications</b>
Input Devices	Biometric input devices for voter identification such as fingerprint scanners or iris recognition systems, Smart cards readers, Audio input devices e.g voice recognition or audio ballots
Processing Unit	Quad-core processor with a clock speed of 2.5 GHz or higher, Specialized hardware for performing cryptographic operations, Multiple processing units for parallel processing of voting data
Memory Storage	Internal storage capacity of 64 GB or higher, Redundant storage arrays with automatic failover in case of disk failure, Encrypted memory storage
Software	Proprietary voting software with built-in encryption and tamper-detection, Customized user interfaces for different types of elections, voting systems, or languages, Real-time monitoring and reporting tools for tracking voting data, such as voter turnout and demographic data, Integration with other systems such as NIDA

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Security Features	Multi-factor authentication, Physical security measures such as tamper-evident seals, secure enclosures, and video surveillance, Advanced encryption technologies, such as homomorphic encryption, for protecting voting data from interception or manipulation
Connectivity	Ethernet connectivity to a centralized server, Wi-Fi connectivity for remote voting, Cellular connectivity for mobile voting
Printers	Thermal printer for printing paper receipts, Ink-jet printer for printing paper ballots, Laser printer for printing large volumes of paper ballots
Data Backup	Battery backup system with a capacity of 3 hours, Data replication to multiple servers in different geographic locations, Manual backup system using paper ballots or other offline methods
Power Source	AC power adapter with an input voltage of 100-240V
Warranty	3/3/3 years of parts, labor, on-site support

**SPECIFICATIONS**

Code: 43211714 **Biometric identification equipment**

<b>Category</b>	<b>Minimum Specification</b>
Biometric Time Attendance Device	Device : Biometric Time Attendance Device Operating System: Android 9 or later Display: 7 inches, 600*1024 Processor: Quad core 1.3 GHz or above RAM: 1GB RAM, 8GB Flash  Fingerprint Scanner: FBI PIV Certified, Support WSQ format  Face Camera: Dual-lens Camera 2MP+2MP or 5MP with Flash LED  GPS: Yes Light: Yes

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	<p>Contactless Card Reader: ISO14443 Type A/B, Mifare          SDK: Opensource/Lifetime License          Audio: Digital Audio Speaker</p> <p>Network/Connectivity: Ethernet, Wi-Fi , Bluetooth          Interfaces and Ports: RJ45, Micro USB</p> <p>Bracket: Wall Mount Bracket          Ingres Protection: IP55/66</p> <p>Environmental: Operating temperature: -20°C ~ 55°C          Power Supply: 12V/2A          Warranty 12 months</p>
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**SPECIFICATIONS**

Code: 43211712 **Graphics tablets**

<b>Category</b>	<b>Minimum Specification</b>
Digital Signature Display/ Signature Touch pads	<p>Type: Business Signature Pads</p> <p>Dimensions (W x H x D): 6.4 x 6.2 x 0.4 inches / 163 x 157 x 10 mm</p> <p>Weight (including stand): 0.6 lbs / 275 g            Power supply: USB bus powered            Power consumption: 2.5 W maximum            Communication interface: USB/VCP/RS-232            LCD Display: Amorphous TFT LCD            Cover plate surface: AG etched glass            Native resolution: 800 x 480 pixels            Reading Technology: Electromagenetic Resonance (EMR)            Active area size: 4.3 x 2.6 inches / 108 x 65 mm            Coordinate resolution: 2540 lpi / 0.01 mm/pt (non-interpolated)            Coordinate accuracy: ±0.02 inches / ±0.5 mm (center)            Report rate: 200 points per second (non-interpolated)            Pressure levels: 1024 (non-interpolated)            Encryption: AES256 / RSA2048            Pen storage: Pen compartment</p>

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	<p>Connectivity security: USB cable locking system  Data security: Real-time image capture without data storage. Internal memory for images only.  Security lock slot: Yes  Operating temperature, relative humidity: +41° F to +104° F / +5° C to +40° C, (humidity 30 % to 80 % RH, no condensing)</p> <p>Storage temperature, relative humidity: -4° F to +140° F / -20° C to +60° C, (humidity 30% to 90% RH, no condensing)</p> <p>Signature software compatibility: Compatible with Windows signature / eSign software and Wacom's sign pro PDF and sign pro PDF Plug-in for Adobe Acrobat. For Windows, C++, .Net and Java development libraries available for developers (contact availability in other development languages and platforms)us for library and software</p> <p>Package content: Signature pad, cordless and battery-free pen, USB cable (9.84 ft / 3 m), quick start guide, pen tether (nylon fiber, 19.7 inch / 50 cm)</p>
<p>Executive Braille Tablets</p>	<p>Type: Braille Tablets  Operating System: Android 8.1 or equivalent or later</p> <p>Size and Weight  Height: 2.06 cm (0.8")  Width: 24.4 cm (9.5")  Depth: 16.2 cm (6.3")  Weight: 900 g (2 lbs.)</p> <p>Major Capabilities  Snapdragon 820 (APQ8096)  Quad-core Kryo 2.2 GHz 64-bit CPU  Integrated PMIC  Memory, 4 GB LPDDR4 RAM POP @ 1866 MHz  Storage memory, 64 GB UFS 2.0  Wireless  Wi-Fi 802.11a/b/g/n/ac 2.4/5.0 GHz2x2 MU-MIMO  Bluetooth 4.2  Wireless interface terminated in RF connector  GNSS – Qualcomm IZat Gen 8C (GPS and Glonass)  Audio CODEC</p>

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	<p>Internal Omni Directional MEMS type Microphone Internal stereo 1W Speakers (two speakers) Audio stereo output connector for headphones or external speaker Audio stereo input connector for external microphone or audio recording (line-in). External SD card socket with full SDIO interface 22.86 cm x 7.62 cm (9" x 3.8") multi-touch capacitive touch screen over a 1024 x 600 18 cm (7") diagonal LCD screen, Visual touch surface and screen HDMI output (audio and video) for external display 18 or 32 cells Braille display with routing cursors (1 button per cell) 21MP camera with dual LED flash One USB 3.0 type C port for PC connectivity, debug and battery recharge. One USB 2.0 type A host port capable of supplying 500 mA Access to USB 3.0 speeds Integrated Battery Charger Rechargeable and user-replaceable 5100 mAh Li-Ion Battery with thermistor and internal gas gauge Real Time Clock with battery backup Vibration device Sensors 3D Accelerometer 3D Gyroscope 3D Electronic compass Special connector for external keyboard/accelerometer IEEE 802.11a/b/g/n/ac compliant, 2x2 MU-MIMO capable Frequency Band: 2.4 GHz (channels 1 to 13) and 5.0 GHz Power requirement: +5VDC, 1.5A Battery: Li-Polymer 3.7V nominal, 5100 mAh, in operation charge time of 12 hours Bluetooth 4.2 (dual mode: BLE and classic) Operating temperature range: +5 to +45 degrees Celsius Battery charging temperature range : +5 to +35 degrees Celsius Storage temperature: -20 to +70 degrees Celsius Operating humidity: 5% to 90% (non-condensing) Storage humidity: 5% to 95% (non-condensing)</p>
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	Warranty: 12 months.
Basic Braille Tablets	<p>Type: Braille Tablets</p> <p>Processor: 1.2GHz Mobile Processor, Dual-core ARM® Cortex™-A9</p> <p>Storage: 32GB internal SD card for firmware and storage</p> <p>RAM: 2GB Low Power DDR2 SDRAM</p> <p>Display: 22.86cm x 7.62 cm (9" x 3.8") Multi-touch capacitive touch screen over a 1024 x 600, 18 cm (7") diagonal LCD screen</p> <p>HDMI output for external display (no audio) or 32 Braille display cells with cursor routers</p> <p>Camera: 8MP camera with LED based lighting.</p> <p>Connectivity: Wi-Fi 802.11 b/g/n  Bluetooth 4.0  GPS: Yes  Battery: Li-Polymer 3.7V nominal, 5100mAh.</p> <p>Warranty: 12 months.</p>

**SPECIFICATIONS**

Code: 43211701 **Code reader equipment**  
Bar code **reader**

<b>Feature</b>	<b>Minimum Specification</b>
Scanning Technology	Laser
Interface	USB, Keyboard Wedge, RS-232 Serial
Scanning Range	0.5 inches to 8 inches (1.27 cm to 20.32 cm) for 100% UPC/EAN
Scanning Speed	Up to 72 scans per second
Durability	Withstands multiple 5-foot (1.5-meter) drops to concrete
Compatibility	Reads all standard 1D barcodes, including GS1 DataBar
Power Source	Powered via USB or external power supply
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-40°F to 158°F (-40°C to 70°C)

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Humidity	5% to 95% relative humidity, non-condensing
Scan Pattern	Single line
Scan Angle	Horizontal: 50°, Vertical: 24°
Depth of Field	0.5 inches to 8 inches (1.27 cm to 20.32 cm) for 100% UPC/EAN
Print Contrast	35% minimum reflectance
Decode Zone	5 mil (0.127 mm)
Motion Tolerance	Up to 72 inches (182.88 cm) per second for 13 mil UPC at optimal focus
Interfaces Supported	USB, RS-232, Keyboard Wedge, IBM 468xx (RS485) and Wand Emulation
Light Source	650 nm laser diode
Auto-sense Mode	Yes, with optional stand
Beeper Volume	Programmable, up to 90 dB
Beeper Tone	7 tones or no beep
Scan Confirmation	LED indicator
Regulatory Compliance	FCC Part 15 Class B, ICES-003 Class B, European Union EMC Directive
User Environment	Designed to withstand multiple drops, operating temperature 32°F to 104°F
Warrant, License and Support	Minimum 12 Months

**SPECIFICATIONS**

QR code **reader**

<b>Feature</b>	<b>Minimum Specification</b>
Compatibility	Compatible with iOS or Android devices, or desktop/laptop computers
Camera Resolution	High resolution camera with at least 8 megapixels
Autofocus	Camera should have autofocus capabilities
QR Code Support	Support for standard, dynamic, and logo QR codes
Processing Speed	Fast enough to read the QR code quickly and accurately
User Interface	Intuitive and easy to use interface with clear instructions
Additional Features	Ability to create QR codes, store scanned codes, or integrate with other apps



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Processing Speed	Fast enough to read the QR code quickly and accurately
Warrant, License and Support	Minimum 12 Months

**SPECIFICATIONS**

**Magnetic stripe reader**

<b>Feature</b>	<b>Minimum Specification</b>
Compatibility	Compatible with the type of magnetic stripe card and encoding format (e.g., ISO 7811, ISO 7813, ABA)
Magnetic Head	Durable and designed to minimize wear on the magnetic stripe
Reading Capabilities	Reads both tracks of data on the magnetic stripe (tracks 1 and 2) and supports different data formats (e.g., ASCII, HEX, BCD)
Interface	USB, RS-232, or keyboard wedge
Speed	Reads and transmits data quickly and accurately
Power Requirements	Can be powered directly from the device it is connected to or requires a separate power source
Durability	Designed to withstand frequent use in various environments
Encryption	Provides encryption and decryption of data on the magnetic stripe for security purposes
Data Parsing	Parses and formats the data read from the magnetic stripe into usable data
Software Development Kit (SDK)	Provides a software development kit for integration with other software applications
Bi-directional reading	Reads the magnetic stripe in both directions for increased accuracy
Multiple card support	Reads multiple magnetic stripe cards simultaneously (optional)
Error Correction	Incorporates error correction algorithms to minimize data errors
Bluetooth Connectivity	Provides Bluetooth connectivity for wireless data transmission (optional)
Warrant, License and Support	Minimum 12 Months

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**SPECIFICATIONS**

Code: 43211711 **Scanners**

<b>Category</b>	<b>Minimum Specification</b>
Document Scanners	<p>Type: Scanner</p> <p>Image Sensor Type Color CCDs (Color Charge Coupled Device) Light Source: White LED Array Optical Resolution: 600 dpi</p> <p>Output Resolution Color (24-bit)/Grayscale (8-bit)/Monochrome</p> <p>50 to 600 dpi (adjustable by 1 dpi increments, 1,200 dpi)</p> <p>Output Color Depth Color: 24-bit, Grayscale: 8-bit, Monochrome: 1-bit</p> <p>Image Processing Function Hardware: Dropout color (Red / Green / Blue), Deskew cropping Software: Multi-image, Blank page skip, i-DTC, Advanced-DTC, Simplified-DTC, sRGB, Auto color, Deskew cropping, Image Emphasis, Color cleanup, Dropout color</p> <p>Scanning Speed (A4, Portrait), Color, Grayscale, Monochrome, ADF Simplex: 60 ppm, Duplex: 120 ipm (200 dpi / 300 dpi)</p> <p>ADF Capacity: 80 Sheets (A4: 80 g/m<sup>2</sup> or 20 lb.) Daily Duty Cycle: 4,000 Pages</p> <p>Document Size ADF Minimum 50.8 mm x 54 mm (Landscape / Portrait) ADF Maximum: 216 mm x 355.6 mm (8.5 in. x 14 in.) Long Document 210 mm x 5,588 mm (8.27 in. x 220 in.)</p>

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	ADF Feeding Paper Weight (Thickness) Letter 27 g/m <sup>2</sup> to 413 g/m <sup>2</sup> (7.2 lb. to 112 lb.) A8 Sheets 127 g/m <sup>2</sup> to 209 g/m <sup>2</sup> (34 lb. to 56 lb.) Card Up to 1.4 mm portrait and landscape feeding  Interface USB 3.0 (backward compatible) Warranty 12months
Artwork scanning	
3D scanning: Scanners	

**SPECIFICATIONS**

Code: 43211706 **Keyboards**

<b>Gaming keyboard technical specification</b>	
<b>Features</b>	<b>Minimum specifications</b>
Size	Full size or Tenkeyless
Key technology	Mechanical
Key caps	PBT
Backlight	RGB
Connectivity	Wired or Wireless
N-Key Rollover	Yes
Anti-Ghosting	Yes
Programmable keys	Yes
Durability	Expected lifespan of at least 10 million keystrokes
Warranty	2 years warranty

<b>Standard keyboard technical specification</b>	
<b>Features</b>	<b>Minimum specifications</b>
Connectivity	USB or Bluetooth
Key layout	Standard QWERTY (minimum keys 104)
Key switches	Membrane or mechanical
Key caps	ABS plastic
Compatibility	Compatible with Windows, macOS, and other operating systems
Durability	Expected lifespan of at least 10 million keystrokes
Warranty	2 years warranty

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<b>Ergonomic keyboard technical specification</b>	
<b>Features</b>	<b>Minimum specifications</b>
Split design	10-20 degree angle
Adjustable tilt	At least 2 levels of tilt
Wrist rests	At least 2cm thick
Low-force keys	No more than 50g of force required to press
Connectivity	USB or Bluetooth
Key layout	Standard QWERTY layout with at least 104 keys
Key switches	Mechanical switches with a tactile or linear feedback
Keycap material	PBT plastic
Cable length	At least 1.5 meters long
Compatibility	Compatible with Windows, macOS, and other operating systems
Durability	Expected lifespan of at least 10 million keystrokes
Warranty	2 years warranty

<b>Mini Keyboard technical specification</b>	
<b>Features</b>	<b>Minimum specifications</b>
Connectivity	Bluetooth
Key layout	QWERTY with at least 61 keys (with a space bar and number keys)
Key switches	Membrane or mechanical switches
Low-profile keys	Yes
Design	Stylish and thin (Smaller than standard keyboard)
Key caps	ABS plastic
Compatibility	Compatible with Windows, macOS, and other operating systems
Chargeable	Yes
Durability	Expected lifespan of at least 5 million keystrokes
Warranty	2 years warranty

**SPECIFICATIONS**

Code: 43211720 **Point of Sale Payment Terminal**

<b>Point of sale payment terminal technical specification</b>	
<b>Features</b>	<b>Minimum specifications</b>
Processor	ARM or Intel Atom
Operating System	Windows Embedded or Android
Memory	1GB RAM

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Storage	8GB internal storage (expandable via SD card)
Display	5-10 inch touch-screen display
Card Reader	Supports magnetic stripe, chip, and contact-less cards, MasterCard & Visa payWave,
Connectivity	Wi-Fi, Ethernet, or cellular connectivity
Security	Encryption, tamper-proofing, and secure data storage, Maximum security with end-to-end encryption.
GPS	Support
USB type C	x 1
Resolution	1280 x 720 resolution
WIFI	support
Bluetooth	support
Printer	High-speed thermal printer Paper roll width/diameter: 57±0.5mm / 40mm
Power	Power adapter, input requirement: 100~ 240VAC Support USB charge
Battery	Embedded lithium battery, 5400mAh, 7.4V
Chargeable	USB/Charging Port
Battery Life	Several hours
Warranty	3 years warranty

**SPECIFICATIONS**

Code: 43211717 **Optical character recognition (OCR)**

<b>Feature</b>	<b>Minimum Specification</b>
Compatibility	Compatible with the image file format it is designed to process, such as JPEG, TIFF, PNG, or PDF
Image Quality	Can handle various image qualities, including color, grayscale, and black-and-white images
Language Support	Able to recognize text in different languages, including non-Latin alphabets such as Cyrillic, Arabic, or Chinese
Accuracy	Able to accurately recognize and convert scanned text into machine-readable text
Speed	Able to process text quickly, especially in high-volume document processing scenarios
Pre-Processing	May include pre-processing features that can help improve OCR accuracy, such as image correction, de-skewing, or noise reduction

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Output Formats	Provides output in various formats, including plain text, searchable PDF, or structured data formats like XML or CSV
Integration	Able to integrate with other software applications or document management systems
Security	Incorporates security features, such as encryption or access control, to protect sensitive information contained in scanned documents
Warrant, License and Support	Minimum 12 Months

**SPECIFICATIONS**

Code: 43211729 **Optical mark reader**

<b>Category</b>	<b>Minimum Specification</b>
Optical mark reader	<p>Type: Optical Mark Recognition (OMR) scanner (more robust/reliable than OCR)</p> <p>Mark positions: 6/inch (1/6"), 5/inch (0.2"), 4/inch (0.25")</p> <p>Speed: 2,000pcs/hour</p> <p>Data Transfer Methods: RS232, USB and Bluetooth</p> <p>Feeding mode: :automatic</p> <p>Capacity: 500 sheets; 2-sided read capability (to read forms printed on both sides); Pencil read (allows for more background colors).</p> <p>Power Source 220-240V</p> <p>Options: Ink (Visible) Read Head Printer Unit (inkjet) Bar code Reader Turnaround double stacker for reject sheets Warranty at least 12months</p>

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**SPECIFICATIONS**

Code: 43211802 **Mouse Pads**

<b>Category</b>	<b>Minimum Specification</b>
Mouse Pad	Type: Mouse Pad Material: natural rubber foam + fabric Size: Medium (250 x 250 mm) Thickness: 3 mm Color: dark Weight: 100 g or lighter Surface: soft Compatibility (Supported sensor type): optical, laser Other features: Roll-up, ANTI-SLIP BASE, Anti-skid Warranty 12months

**Class:** 43211500  
**Name:** **Computers**

Code: 43211503 **Notebook Laptops**

- ✧ Political Leaders Laptop
- ✧ Executive Management Laptop
- ✧ Management Laptop
- ✧ Technical Experts Laptop
- ✧ Videographers and Multimedia Laptop
- ✧ Business Line Officers Laptop
- ✧ Business Line Officers MacBook
- ✧ Business Support Officers Laptop
- ✧ Schools laptop
- ✧ Basic Braille Laptop
- ✧ Technical Expert Braille Laptop

Code: 43211507 **Desktop computers**

- ✧ Political Leaders Desktop
- ✧ Executive Management Desktop
- ✧ Management Desktop
- ✧ Technical Experts Desktop
- ✧ Videographers and Multimedia Desktop
- ✧ Business Line Officers Desktop
- ✧ Business Line Officers iMAC
- ✧ Business Support Officers Desktop
- ✧ Schools Desktop

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Code: 43211509 **Tablet computers**

- ✧ Executives iPad
- ✧ Executives Android Tablets
- ✧ Executives Microsoft Tablets
- ✧ Note-taking, Writing Tablets
- ✧ General purpose Tablets

**SPECIFICATIONS**

Code: 43211503 **Notebook Laptops**

<b>Category</b>	<b>Minimum Specification</b>
Political Leaders, Executive Management, Management Laptop	<p>Type: Business Laptops</p> <p>Operating system Supports Windows 11 Pro (64bit), Mac or Linux 64bit.</p> <p>Processor Intel® Core i7 U-line processor or above</p> <p>Display Screen Size: 13 - 14" or above. Preferred Laptop/ Tablet Model. Touchscreen: Yes</p> <p>Size and Weight Thin and Light (Less than 3Kg).</p> <p>Memory RAM - 16 GB or above</p> <p>Internal Storage: SSD - 500 GB or above</p> <p>Communications/Wireless support: WLAN: Intel® Wireless-AC 9560 (2x2) Gigabit Wi-Fi + Bluetooth® 5 (vPro™) USB Type-A (USB 3.0 Connectivity or latest technology) USB Type-C Ports Fingerprint Reader Mobile Broadband Module (recommended)</p>



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	<p>Input Device:  Keyboard: Illuminated Backlit, spill-resistant keyboard with drain.  Webcam: Yes</p> <p>Supplemental Items:  Leather Case  Mouse (Wireless Rechargeable)  Type-C Charging Adapter (recommended)  Power:  Primary Battery: 3-cell long-life battery or above.  Up to 10 hours.</p> <p>Warranty: 36 months.</p>
<p>Technical Experts Laptop</p>	<p>Type:  Business Laptops</p> <p>Operating system  Supports Windows 11 Pro (64bit), Mac or Linux 64bit.</p> <p>Processor  Minimum (or Intel® Xeon® or Intel® Core i7 H-line at least 9th Gen vPro processor (2.6 GHz, up to 4.3 GHz with Turbo Boost, 9MB cache, 6 core) + Intel® UHD Graphics 630 (2XD26AV)) or above</p> <p>Display  Maximum 15.6" diagonal UHD B-LED UWVA Anti-Glare DreamColor for HD Webcam slim (3840x2160) (400 Nits)</p> <p>Size and Weight  Thin and Light (Less than 3Kg).</p> <p>Graphics  Minimum NVIDIA Quadro P1000 (4 GB GDDR5 dedicated) Graphics or above.  Full 4K Graphics Support.</p> <p>Memory  RAM - Minimum 32 GB (1x32 GB) DDR4 2666 or above</p> <p>Internal Storage:  SSD - 1 TB or above</p> <p>Communications/Wireless support:</p>

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	<p>WLAN: Intel® Wireless-AC 9560 (2x2) Gigabit Wi-Fi + Bluetooth® 5 (vPro™)  Fingerprint Reader: Yes  USB Type-A (USB 3.0 Connectivity or latest technology)  USB Type-C Ports  Mobile Broadband Module (recommended)</p> <p>Input Device:  Keyboard: Illuminated Backlit, spill-resistant keyboard with drain.</p> <p>Supplemental Items:  Stereo headphone/microphone combo  Laptop Case or Back Pack  Mouse (Wireless Rechargeable)  Type-C Charging Adapter (recommended)  Power:  Primary Battery: 6-cell long life battery or above.</p> <p>Warranty: 36 months.</p>
<p>Videographers and Multimedia Laptop</p>	<p>Type:  Business Laptops</p> <p>Operating system  Windows 11 Pro (64bit), Mac or Linux 64bit.</p> <p>Processor  GPU: Nvidia RTX 40-series GPUs or above  CPU: Intel 13th Gen Core i9 H-line processor or above</p> <p>Display  15-16"  Webcam slim (3840x2160) (400 Nits)</p> <p>Size and Weight  Thin and Light (Less than 3Kg).</p> <p>Graphics  Minimum NVIDIA Quadro P1000 (4 GB GDDR5 dedicated) Graphics or above.  Full 4K Graphics Support.</p> <p>Memory  RAM - 32 GB DDR5 4800 or above</p> <p>Internal Storage:</p>

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	<p>SSD - 1 TB or above</p> <p>Communications/Wireless support:  WLAN: Intel® Wireless-AC 9560 (2x2) Gigabit Wi-Fi +  Bluetooth® 5 (vPro™)  Fingerprint Reader: Yes  USB Type-A (USB 3.0 Connectivity or latest technology)  USB Type-C Ports  Mobile Broadband Module (recommended)</p> <p>Input Device:  Keyboard: Illuminated Backlit, spill-resistant keyboard  with drain.</p> <p>Supplemental Items:  Stereo headphone/microphone combo  Laptop Case / Back pack  Mouse (Wireless Rechargeable)  Type-C Charging Adapter (recommended)  Power:  Primary Battery: 6-cell long life battery or above.</p> <p>Warranty: 36 months.</p>
<p>Business Line Officers Laptop</p>	<p>Type: Business Laptops</p> <p>Operating system Supports Windows 10 (64bit), Linux 64bit.</p> <p>Processor Intel® Core i7 H-line processor or above</p> <p>Display 14" diagonal UHD (Touchscreen preferred) or above Webcam slim (3840x2160) (400 Nits)</p> <p>Memory RAM - 16 GB or above</p> <p>Internal Storage: SSD - 1 TB or above</p> <p>Communications/Wireless support:  WLAN: Intel® Wireless-AC 9560 (2x2) Gigabit Wi-Fi +  Bluetooth® 5 (vPro™)  Fingerprint Reader: Yes</p>

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	<p>USB Type-A (USB 3.0 Connectivity or latest technology)  USB Type-C Ports  Mobile Broadband Module (recommended)</p> <p>Input Device:  Keyboard: Illuminated Backlit, spill-resistant keyboard with drain.</p> <p>Supplemental Items:  Laptop Case / Back pack  Mouse (Wireless Rechargeable)  Type-C Charging Adapter (recommended)</p> <p>Power:  Primary Battery: 4-cell long-life battery or above.</p> <p>Warranty: 36 months.</p>
<p>Business Line  Officers MacBook</p>	<p>Type:  Business Laptops</p> <p>Operating system  OSX</p> <p>Processor  core CPU, 19-core GPU or M1 chip or above</p> <p>Display  16"</p> <p>Memory  RAM - 16 GB or above</p> <p>Internal Storage:  SSD - 1 TB or above</p> <p>Communications/Wireless support:  WLAN: Wi-Fi 6 + Bluetooth® 5  USB Type-A (USB 3.0 Connectivity or latest technology)  USB Type-C Ports</p> <p>Input Device:  Keyboard: Backlit Magic Keyboard.</p> <p>Supplemental Items:  Laptop Case / Back pack  Mouse</p>

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	<p>Type-C Charging Adapter (recommended)  Power:  Primary Battery: Up to 12 hours or above.</p> <p>Warranty: 36 months.</p>
<p>Business Support Officers Laptop</p>	<p>Type:  Business Laptops</p> <p>Operating system  Supports Windows 10 (64bit), Linux 64bit.</p> <p>Processor  Intel® Core i5 or above</p> <p>Display  14" diagonal UHD or above  Webcam</p> <p>Memory  RAM - 8 GB or above</p> <p>Internal Storage:  SSD - 256 GB or above</p> <p>Communications/Wireless support:  WLAN: Intel® Wireless-AC 9560 (2x2) Gigabit Wi-Fi +  Bluetooth® 5 (vPro™)</p> <p>Supplemental Items:  Laptop Case / back pack  Mouse  Power:  Primary Battery: 3-cell long-life battery or above.</p> <p>Warranty: 36 months.</p>
<p>Schools Laptop</p>	<p>Operating system  Supports Windows 10 (64bit), Linux 64bit.</p> <p>Processor  Intel® Core i5 or above</p> <p>Display  14" diagonal UHD or above  Webcam</p>

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	<p>Memory RAM - 4 GB or above</p> <p>Internal Storage: HDD - 500 GB or above</p> <p>Communications/Wireless support: WLAN: Intel® Wireless-AC 9560 (2x2) Gigabit Wi-Fi + Bluetooth® 5 (vPro™)</p> <p>Supplemental Items: Laptop Case / back pack Mouse Power: Primary Battery: 3-cell long-life battery or above.</p> <p>Warranty: 36 months.</p>
Basic Braille Laptop	<p>Type: All-in-one Braille laptop computer 40 braille cells QWERTY Keyboard</p> <p>Operating system Supports Windows 11 and beyond.</p> <p>Processor Intel® Core i5 or above</p> <p>Display 14" diagonal UHD or above Webcam</p> <p>Memory RAM - 8 GB or above</p> <p>Internal Storage: SSD - 256 GB or above</p> <p>Communications/Wireless support: WLAN: Intel® Wireless-AC 9560 (2x2) Gigabit Wi-Fi + Bluetooth® 5 (vPro™)</p> <p>Supplemental Items: Laptop Case / back pack Mouse Power:</p>

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	<p>Primary Battery: 3-cell long-life battery or above.</p> <p>Warranty: 36 months.</p>
<p>Technical Expert Braille Laptop</p>	<p>Type: All-in-one Braille laptop computer 40 braille cells QWERTY Keyboard</p> <p>Operating system Supports Windows 11 and beyond.</p> <p>Processor Intel® Core i7 or above</p> <p>Display 14" diagonal UHD or above Webcam</p> <p>Memory RAM - 32 GB or above</p> <p>Internal Storage: SSD – 1TB or above</p> <p>Communications/Wireless support: WLAN: Intel® Wireless-AC 9560 (2x2) Gigabit Wi-Fi + Bluetooth® 5 (vPro™)</p> <p>Supplemental Items: Laptop Case / Back pack Mouse Power: Primary Battery: 3-cell long-life battery or above.</p> <p>Warranty: 36 months.</p>

**SPECIFICATIONS**

Code: 43211507 **Desktop computers**

<b>Category</b>	<b>Minimum Specification</b>
<p>Political Leaders, Executive Management,</p>	<p>Operating system Supports Windows 11 Pro (64bit) or later. Supports Linux</p>

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<p>Management Desktop</p>	<p>Processor Intel® Core i7 or above</p> <p>Processor Speed 12 MB cache, 10 cores, 12 threads, up to 4.70 GHz Turbo</p> <p>Memory RAM - 16 GB or above</p> <p>Display HDMI or DVI support</p> <p>Hard Drive 1TB or Above</p> <p>Video Card Intel® Integrated Graphic</p> <p>Monitor/LCD 27" Monitor flat panel LCD</p> <p>Ports At least 6 USB 2.0 or 3.0 standard serial port, 1 parallel port, 1, 1 VGA Port, Audio in/out</p> <p>Keyboard USB standard Keyboard</p> <p>Pointing Device USB Optical scroll mouse</p> <p>Connectivity Integrated Gigabit Ethernet, 802.11b/g/n Wireless Interface</p> <p>Others Built in Speakers CD/DVD, R/RW Combo Drive Internal Warranty: 36 months.</p>
<p>Technical Experts Desktop</p>	<p>Operating system Supports Windows 11 Pro (64bit) or later. Supports Linux</p>



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	<p>Processor Intel® Core i7 or above</p> <p>Processor Speed 12 MB cache, 10 cores, 12 threads, up to 4.70 GHz Turbo</p> <p>Memory RAM - 32 GB or above</p> <p>Display HDMI or DVI support</p> <p>Hard Drive 256SSD, 1TB or Above</p> <p>Video Card Intel® Integrated Graphic</p> <p>Monitor/LCD 27" Monitor flat panel LCD</p> <p>Ports At least 6 USB 2.0 or 3.0 standard serial port, 1 parallel port, 1, 1 VGA Port, Audio in/out</p> <p>Keyboard USB standard Keyboard</p> <p>Pointing Device USB Optical scroll mouse</p> <p>Connectivity Integrated Gigabit Ethernet, 802.11b/g/n Wireless Interface</p> <p>Others Built in Speakers CD/DVD, R/RW Combo Drive Internal Warranty: 36 months.</p>
Videographers and Multimedia Desktop	<p>Operating system Supports Windows 11 Pro, (64bit) or Mac OS X or Linux.</p> <p>Processor Intel® Core i7 or above</p>

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	<p>Processor Speed up to 5.0 GHz with Intel® Turbo Boost Technology, 30 MB L3 cache, 16 cores, 24 threads</p> <p>Memory RAM - 32 GB or above</p> <p>Display HDMI or DVI support</p> <p>Hard Drive 256SSD, 1TB or Above</p> <p>Video Card Intel® Integrated Graphic</p> <p>Monitor/LCD 27" Monitor flat panel LCD</p> <p>Ports At least 6 USB 2.0 or 3.0 standard serial port, 1 parallel port, 1, 1 VGA Port, Audio in/out</p> <p>Keyboard USB standard Keyboard</p> <p>Pointing Device USB Optical scroll mouse</p> <p>Connectivity Integrated Gigabit Ethernet, 802.11b/g/n Wireless Interface</p> <p>Others Built in Speakers CD/DVD, R/RW Combo Drive Internal</p> <p>Warranty: 36 months.</p>
<p>Business Line Officers Desktop</p>	<p>Operating system Supports Windows 11 Pro (64bit) or later. Supports Linux</p>

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	<p>Processor Core CPU, 8-Core GPU or above</p> <p>Processor Speed Intel(R) Core (TM) i7 or above</p> <p>Memory RAM - 16 GB or above</p> <p>Display HDMI or DVI support</p> <p>Hard Drive 500 GB or Above</p> <p>Video Card Intel® Integrated Graphic</p> <p>Monitor/LCD 27" Monitor flat panel LCD</p> <p>Ports At least 2 USB 2.0 or 3.0</p> <p>Keyboard USB standard Keyboard</p> <p>Pointing Device USB Optical scroll mouse</p> <p>Connectivity Integrated Gigabit Ethernet, 802.11b/g/n Wireless Interface</p> <p>Others Built in Speakers CD/DVD, R/RW Combo Drive Internal</p> <p>Warranty: 36 months</p>
<p>Business Line Officers iMAC</p>	<p>Operating system Mac OS X</p> <p>Processor Core CPU, 8-Core GPU or above</p>

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	<p>Processor Speed 3.0GHz or above</p> <p>Memory RAM - 16 GB or above</p> <p>Display HDMI or DVI support</p> <p>Hard Drive 512 SSD, 1TB or Above</p> <p>Video Card Intel® Integrated Graphic</p> <p>Monitor/LCD 27" Monitor flat panel LCD</p> <p>Ports At least 2 USB 2.0 or 3.0</p> <p>Keyboard USB standard Keyboard</p> <p>Pointing Device USB Optical scroll mouse</p> <p>Connectivity Integrated Gigabit Ethernet, 802.11b/g/n Wireless Interface</p> <p>Others Built in Speakers CD/DVD, R/RW Combo Drive Internal</p> <p>Warranty: 36 months.</p>
<p>Business Support Desktop</p>	<p>Operating system Supports Windows 11 Pro (64bit) or later. Supports Linux</p> <p>Processor Core CPU, 8-Core GPU or above</p>

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	<p>Processor Speed Intel(R) Core (TM) i5 or above</p> <p>Memory RAM - 8 GB or above</p> <p>Display HDMI or DVI support</p> <p>Hard Drive 500 GB or Above</p> <p>Video Card Intel® Integrated Graphic</p> <p>Monitor/LCD 27” Monitor flat panel LCD</p> <p>Ports At least 2 USB 2.0 or 3.0</p> <p>Keyboard USB standard Keyboard</p> <p>Pointing Device USB Optical scroll mouse</p> <p>Connectivity Integrated Gigabit Ethernet, 802.11b/g/n Wireless Interface</p> <p>Others Built in Speakers CD/DVD, R/RW Combo Drive Internal</p> <p>Warranty: 36 months</p>
Schools Desktop	<p>Operating system Supports Windows 10 Pro (64bit) or later. Supports Linux</p> <p>Processor Core CPU, 8-Core GPU or above</p>

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	<p>Processor Speed Intel(R) Core (TM) i5 or above</p> <p>Memory RAM - 4 GB or above</p> <p>Display HDMI or DVI support</p> <p>Hard Drive 500 GB or Above</p> <p>Video Card Intel® Integrated Graphic</p> <p>Monitor/LCD LCD Screen 18" or above</p> <p>Ports At least 2 USB 2.0 or 3.0</p> <p>Keyboard QWERTY Diagonal Keyboard</p> <p>Pointing Device USB Optical scroll mouse</p> <p>Form Factor Tower</p> <p>Connectivity Integrated 10/100/1000 Gigabit Ethernet, Realtek 802.11 ac (2x2) Wi-Fi and Bluetooth Combo</p> <p>Others Built in Speakers Integrated Microphone Port CD/DVD, R/RW Combo Drive Internal</p> <p>Warranty: 36 months</p>
All-In-One Desktop	<p>Minimum Technical Specification Type: All-in-One Desktop Processor 12<sup>th</sup> Gen Intel® Core™ i7 or above</p>

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	<p>Processor Speed 12 MB cache, 10 cores, 12 threads, up to 4.70 GHz Turbo</p> <p>Memory RAM 16 GB or Above</p> <p>Display At least 23-in. display Full HD Intel® UHD Graphics</p> <p>Operating Systems Supports Windows 11 Pro (64bit). Supports Linux</p> <p>Storage 1TB SSD</p> <p>Ports 2 USB 3.1 ports 1 USB Type-C 1 HDMI 1 RJ45 Ethernet port</p> <p>Keyboard USB/Wireless Keyboard</p> <p>Pointing Device USB/Wireless Optical scroll mouse</p> <p>Connectivity Integrated Gigabit Ethernet, 802.11b/g/n Wireless Interface</p> <p>Others Built-in Speakers</p> <p>Warranty: 36 months.</p>
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**SPECIFICATIONS**

Code: 43211509 **Tablet Computers**

Category	Minimum Specification
Executives Pads	Type: Business
	Screen

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	<p>9.7-11 inches  Processor  Octa-core, Apple GPU (8-core graphics)</p> <p>RAM  8 GB RAM  Storage  At least 128 GB  Network and Connectivity  Wi-Fi 6: IEEE 802.11 a/b/g/n/ac/ax compatible  Bluetooth Wireless 5.0 technology  Nano-SIM and eSIM  GPS and GLONASS support</p> <p>SIM Card Slot: Yes  Stylus Support: Yes  Operating System: iOS 16.1  Battery: 10 hours typical use  Battery Charger: USB cable charger and 3 square pin type plug  Supplementary  Stylus  Protection cover</p> <p>Warranty: 12 months.</p>
Executives Tablet-1	<p>Type:  Business</p> <p>Screen  9.7-11 inches  Processor  Octa-core</p> <p>RAM  8 GB RAM  Storage  At least 128 GB  Network and Connectivity  Wi-Fi 6: IEEE 802.11 a/b/g/n/ac/ax compatible  Bluetooth Wireless 5.0 technology  Nano-SIM and eSIM  GPS and GLONASS support</p> <p>SIM Card Slot: Yes  Stylus Support: Yes  Operating System: Android</p>



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	<p>Battery: 10 hours typical use          Battery Charger: USB cable charger and 3 square pin type plug          Supplementary          Stylus          Protection cover</p> <p>Warranty: 12 months.</p>
Executives Tablet-2	<p>Type:          Business</p> <p>Screen          9.7-11 inches          Processor          10th Gen Intel® Core™ i3 Processor.          RAM          8 GB RAM          Storage          At least 128 GB          Network and Connectivity          Wi-Fi 6: IEEE 802.11 a/b/g/n/ac/ax compatible          Bluetooth Wireless 5.0 technology          Nano-SIM and eSIM          GPS and GLONASS support</p> <p>SIM Card Slot: Yes          Stylus Support: Yes          Operating System: Windows 11 Pro          Battery: 10 hours typical use          Battery Charger: USB cable charger and 3 square pin type plug          Supplementary          Stylus          Protection cover</p> <p>Warranty: 12 months</p>
Note-taking, Writing Tablets	<p>Type:          Tablet</p> <p>Screen          9.7-11 inches          Processor          Octa-core</p> <p>RAM          4 GB RAM</p>

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	<p>Storage At least 64 GB</p> <p>Network and Connectivity Wi-Fi Bluetooth Wireless 5.0 GPS and GLONASS support</p> <p>SIM Card Slot: Yes Stylus Support: Yes Operating System: Android 12, IOS 16, Windows 11 Pro or later Battery: 6000mAh or 10 hours typical use Battery Charger: USB cable charger and 3 square pin type plug Supplementary Stylus Protection cover</p> <p>Warranty: 12 months</p>
<p>General Purpose Tablets</p>	<p>Type: Business Tablet</p> <p>Screen 9.7 – 11 inches 16:9 1280 x 720 Outdoor readability: Readable in significant sunlight.</p> <p>Processor CPU Quad-core 1.4 GHz or above</p> <p>RAM 4 GB RAM or Above</p> <p>Storage At least 64 GB</p> <p>Connectivity WiFi 802.11/b/g/n and Bluetooth v 4.0 connection Micro USB Connectivity SIM Card Slot ( Nano or Micro or standard)</p> <p>Network: LTE 3G and 4G Camera: Rear Camera (8MP) and Front camera 4MP GPS: Yes SIM Card Slot: Yes Stylus Support: Yes Operating System: Android 10.0 or above Battery: 6000mAh or 10 hours typical use</p>

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	<p>Battery Charger: USB cable charger and 3 square pin type plug          Supplementary Stylus          Protection cover with a hand strap</p> <p>Warranty: 12 months</p>
GNSS Tablets	<p>Minimum Technical Specification          Type:          Industrial Tablets          Display: 8 inches, touchscreen          Outdoor readability: Readable in significant sunlight.          Processor: CPU Quad-core 1.4 GHz or above          RAM: 4 GB RAM or above          Internal Memory: 32 GB or above          Connectivity:          WiFi 802.11/b/g/n          LTE 3G and 4G          GPS          GNSS          Battery: 6000 mAh or 10 hours typical use          Protection Level: IP65, Rugged, Waterproof          Warranty: 12 months.</p>

Code: 43221504 **Premise branch exchange PABX systems**

<b>Features</b>	<b>Minimum Specifications</b>
CPU	Intel Atom Dual Core or higher
RAM	4 GB or higher
Hard drive	32 GB or higher
Ethernet ports	2 or more Gigabit Ethernet ports
USB ports	2 or more USB ports
Call control protocols	SIP, SCCP, H.323, or MGCP
Call features	Voicemail, call recording, conferencing, call routing, IVR, music on hold, etc.
Integration	Support for CRM and other business applications
Operating system	CentOS or Debian Linux
IP phones and softphones	Supported from various vendors, including Polycom, Yealink, Cisco
PSTN connectivity	Supported through VoIP gateways or SIP trunks from telecom providers
Interoperability	Compatible with other IP PBXs and VoIP devices using industry-standard protocols

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Extensions	Supports up to 500 extensions
Concurrent calls	Supports up to 200 concurrent calls
Expansion	Option to add expansion modules for more ports and capacity
High availability	Options for redundancy and failover
Firewall	Built-in firewall
Call encryption	SIPS and SRTP

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**SPECIFICATIONS**

**Maps and Geospatial data Printers**

<b>Features</b>	<b>Minimum Specification</b>
Printer Type	Professional scanner Large format printer - inkjet or laser - color
Printing Technology	Thermal Inkjet or Laser
Ink Palette Supported (Colors)	4-ink or 6-ink (cyan, magenta, yellow, black, light cyan, and light magenta)
Ink Types	Dye-based (C, M, Y), pigment-based (K)
Max Media Size	Roll or sheet (typically 24 to 44 inches wide)
Max Resolution (Color)	Up to 2400 x 1200 optimized dpi (inkjet) or 1200 x 1200 dpi (laser)
Max Resolution (Black)	Up to 2400 x 1200 optimized dpi (inkjet) or 1200 x 1200 dpi (laser)
Print Speed	Up to 30 sec/page on A1/D, 76 A1/D prints per hour (inkjet), or up to 4 D/A1 pages/minute (laser)
Interface	Gigabit Ethernet, USB 2.0
RAM	1 GB or more
Hard Drive	500 GB
Media Handling	Roll feed, sheet feed, automatic cutter
Networking	Print server, Wi-Fi (for some models)
Power	AC 100-240 V
Accuracy	At least 1200 DPI (or 600 PPI) for fine details in technical drawings
Data capture	High-quality, accurate data capture through advanced image processing algorithms
Software bit depth	48 bits for some models, depending on the file format used
Scanning speed	At least 10 inches per second

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Imaging technology	CCD (Charge-Coupled Device) for high-quality imaging
Max scan width	Up to 44 inches
Max media width	Up to 48 inches
Max media thickness	Up to 0.6 inches
Paper path	Straight-through for smooth and reliable document handling
Color space	sRGB or Adobe RGB for accurate color reproduction
Media type	Wide range, including bond paper, vellum, and film
Scan file formats	TIFF, JPEG, PDF for compatibility with a range of software applications
Supported software	AutoCAD, Revit, MicroStation, etc. for seamless integration into existing workflows
Accessories in the box	Cables, software, stand, dust cover, etc. for ease of use and protection of the scanner
Warranty	3/3/3 years of parts, labor, on-site support

**Class:** 45111600

**Name:** Projectors and supplies

## Projectors

<b>Features</b>	<b>Minimum Specification</b>
Projection System	3LCD, 3-chip technology
Projection Method	Front / rear / ceiling mount
Pixel Number	480,000 dots (800 x 600) x 3
Color Brightness (Color Light Output)	2600 lumens
White Brightness (White Light Output)	2600 lumens
Aspect Ratio	4:3
Native Resolution	800 x 600 (SVGA)
Resize	640 x 480 (VGA), 1024 x 768 (XGA), 1152 x 864 (SXGA1), 1280 x 800 (WXGA), 1280 x 960 (SXGA2), 1280 x 1024 (SXGA3), 1280 x 768 (WXGA60-1), 1360 x 768 (WXGA60-2), 1400 x 1050 (SXGA+), 1440 x 900 (WXGA+)

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Lamp Type	E-TORL™ 200 W UHE
Lamp Life	ECO mode: Up to 5000 hours
Normal mode	Up to 4000 hours <sup>2</sup>
Size (projected distance)	30" – 350" (2.9' – 34.2')
USB Plug 'n Play	Projector is compatible with PC and Mac® computers
Contrast Ratio	Up to 3000:1
Color Reproduction	16.77 million colors
Normal mode	Up to 4000 hours <sup>2</sup>
Warranty	3 years

**Class:** 43191500

**Name:** Personal Communication Devices

Code: 43191515 **Speaker phone**

**Group Videoconference Tools**

Includes	Group camera, speakerphone, remote control, cables, powered hub, AC adapter and mount
No. of participants	Minimum 14
Compatibility	Windows, macOS, and other operating systems
Connectivity	USB 2.0 Type-A, Bluetooth, NFC
Special features	Plug-and-play, autofocus, echo and noise cancellation, tripod thread, smooth motorized pan, tilt and zoom controlled from remote or console, LCD for caller ID, call duration and other functional response
Warranty	36 months.

**Class:** 43211900

**Name:** Computer displays

Code: 43211905: **Organic Light Emitting display**

**Monitor Screen 27 inches**

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Aspect Ratio	16:9
Display Resolution Maximum	3840 x 2160 pixels
Screen Size	27 inches
Display Type	LED
Item Dimensions LxWxH	7.66 x 24.13 x 17.21 inches
Item Weight	7.21 lbs
Refresh Rate	100 hertz
Warranty	36 months.



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**2.2 Software Grouping**

<b>SOFTWARE GROUPS AND SPECIFICATIONS</b>		
<b>CODES</b>	<b>COMMODITY NAME</b>	<b>GROUPS</b>
<b>CLASS: BUSINESS FUNCTION SPECIFIC SOFTWARE</b>		
43231503	Procurement software	Procurement software
43231506	Materials requirements planning logistics and supply chain software	Materials requirements planning logistics and supply chain software
43231507	Project management software	Project management software
43231508	Inventory management software	Inventory management software
43231509	Bar coding software	Bar Code
		QR
43231510	Label making software	Label making software
43231512	License management software	License management software
43231514	Sales and marketing software	Digital Marketing
		Push notifications (messages and emails)
		Research and Development Software
<b>CLASS: FINANCE ACCOUNTING AND ENTERPRISE RESOURCE PLANNING ERP SOFTWARE</b>		
43231602	Enterprise resource planning ERP software	
43231604	Financial analysis software	
<b>CLASS: COMPUTER GAME OR ENTERTAINMENT SOFTWARE</b>		
43232005	Music or sound editing software	Audio/Video Editing
		Gaming Software
<b>CLASS: CONTENT AUTHORIZING AND EDITING SOFTWARE</b>		
43232101	Pattern design software	Pattern design software
43232102	Graphics or photo imaging software	Graphics or photo imaging software
43232103	Video creation and editing software	Video creation and editing software
43232104	Word processing software	Word processing software
43232105	Charting software	Normal office
		Financial office
43232107	Web page creation and editing software	Web page creation and editing software

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43232110	Spreadsheet software	Office software
		Spreadsheet software
43232111	Optical character reader OCR or scanning software	Optical character reader OCR or scanning software
<b>CLASS: CONTENET AUTHORIZING AND EDITING SOFTWARE</b>		
43232104	Office desktop software	Basic (word, spreadsheet and presentation)
		Advance (basic + access and outlook)
		Document Readers (i.e PDF)
<b>CLASS: NETWORK APPLICATIONS SOFTWARE</b>		
43232701	Application server software	Database Server software
		Virtualization software
		Web servers
		Network Monitoring
		SIEM
<b>CLASS: DESKTOP COMMUNICATIONS SOFTWARE</b>		
43232702	Desktop communications software	Desktop communications software
43232703	Interactive voice response software	Interactive voice response software
43232704	Internet directory services software	Internet directory services software
<b>CLASS: NETWORK MANAGEMENT SOFTWARE</b>		
43232801	Network monitoring software	Data Center network monitoring software
		Office network monitoring software
43232802	Network operating system enhancement software	Network monitoring and management tools
		Network security software
		Network backup and recovery software
		Virtualization software
		Network automation and orchestration tools
43232803	Optical network management software	Optical network management software
43232804	Administration software	Remote administration software
		Network administration software
		System administration software
		Security administration software
		Backup and recovery software
<b>CLASS: NETWORKING SOFTWARE</b>		

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43232902	Communications server software	Voice and video calls Instant messaging Email Conferencing
43232903	Contact center software	Call routing Queuing Analytics Multi-channel support Interactive Voice Response (IVR)
43232905	LAN software	Network management File sharing Print sharing
43232907	Storage networking software	Data center Medium Storage software
43232908	Switch or router software	Switch or router software
43232909	WAN switching software and firmware	WAN switching software and firmware
<b>CLASS: OPERATING ENVIRONMENT SOFTWARE</b>		
43233001	Filesystem software	Filesystem software
43233002	Network operation system software	Network management File sharing Print sharing
43233004	Operating system software	Operating system software
43233005	Computer firmware	Computer firmware
<b>CLASS: SECURITY AND PROTECTION SOFTWARE</b>		
43233201	Authentication server software	Authentication server software
43233205	Transaction security and virus protection software	Endpoint for users Endpoint for servers
<b>CLASS: UTILITY AND DEVICE DRIVERS SOFTWARE</b>		
43233402	Data conversion software	File conversion software Database conversion software Image conversion software Video conversion software Audio conversion software
43233403	Data compression software	Data compression software
43233413	Voice recognition software	Voice recognition software
43233414	Storage media loading software	Storage media loading software

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43233415	Backup or archival software	Backup or archival software
43233416	Codec stacks	media processing library
		set of codecs
43233417	Handwriting recognition software components	Handwriting recognition software components
43233418	Memory drivers	Memory drivers
43233420	Text to speech conversion software	Text to speech conversion software

### **3. IMPLEMENTATION, REVIEW AND ENFORCEMENT**

This document shall be:

- 3.1 Effective upon being reviewed by e-GA Board of Directors and signed by the Authority Board Chairperson.
- 3.2 Subjected to review annually or whenever necessary changes are needed.
- 3.3 Consistently complied with, any exceptions to its application must duly be authorized by the Board Chairperson.
- 3.4 In case of any other new requirement/specification, shall be reviewed by the Authority Management and approved by the Board.

### **4. GLOSSARY AND ACRONYMS**

#### **4.1 Glossary**

##### **Technical Experts**

These are personnel that perform activities related to computer programming, Designing, Simulations, Computer Modelling and all other related activities that requires high end computer processing resource requirements.

##### **Non-technical /Business Line/ Business Support Staff**

These are personnel that perform basic computer operations that does not require high end computer processing resources.

#### **4.2 Acronyms**

<b>Abbreviation</b>	<b>Explanation</b>
BGP	Border Gateway Protocol
DBMS	Database Management System
DDOS	Distributed Denial of Service
EAP	Extensible Authentication Protocol
e-GA	e-Government Authority
LAN	Local Area Network

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MIMO	Multiple Input and Multiple Output
MPLS	Multiprotocol Label Switching
MRC	Maximal Ratio Combining
NAT	Network Address Translation
NSR	Nonstop Active Routing
OSPF	Open Shortest Path First
PKI	Public Key Infrastructure
RE	Routing Engines
RRM	Radio Resource Management
UNSPSC	United Nations Standard Products and Services Code
VPN	Virtual Private Network
VRF	Virtual Routing and Forwarding

**5. RELATED DOCUMENTS**

- 5.1. e-Government Act, 2019.
- 5.2. e-Government General Regulation, 2020.
- 5.3. e-Government Infrastructure Architecture Standards and Technical guidelines (eGA/EXT/IRA/001).
- 5.4. e-Government Guideline (PO-PSM, 2017).
- 5.5. e-Government Act No 10, of 2020.
- 5.6. e-Government General Regulations of 2020.
- 5.7. Guidelines for Development, Acquisition, Operation and Maintenance of e-Government Applications (eGA/EXT/APA/006)
- 5.8. e-Government Security Architecture Standards and Technical Guidelines (e-GA/EXT/ISA/001).

**6. DOCUMENT CONTROL**

Version	Name	Comment	Date
Ver. 1.0	e-GA	Creation of Document	December 2020
Ver 1.1	e-GA	Reviewing the Document to align with Technology Changes	July 2022
Ver. 2.0	e-GA	Aligning the document to UNSPSC Codes	February 2024