Reference Technical Requirements for IT Products

GITP Category C (Microcomputer Equipment)

1. Specifications of Add-on Hardware and Software Items

For each of those items **marked with an asterisk**, the applicant who applies to become GITP provider of the sub-category of Category C to which such item belongs must propose at least one model (together with all requested information) for such item.

Whilst it is not mandatory to do so, for each of those items which are not marked with an asterisk, the applicant applying to become a GITP provider of the relevant sub-category to which such item belongs may wish to propose one model (together with the requested information) for such item.

1.1 Sub-Category C1 - Desktop Computer

1.1.1 Desktop Computer [Item No. 51000]*

Processor	■ At least dual-core 64-bit processor(s)
System Memory	■ At least 8GB DDR4 or better
Internal Storage	■ At least 240GB SSD (raw capacity)
Interface Port	■ At least one (1) USB 3.1 port or better
Others	■ Shall provide keyboard, mouse and power cord
Operating System	■ Preloaded with the latest version of Desktop Operating System which can be OEM version
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D01

1.1.2 Desktop Computer Upgrade Option [Item No. 51010]

Feature	■ Provide at least one (1) desktop computer upgrade option as listed below: ▪ Memory module ▪ Hard disk drive

1.1.3 Monitor [Item No. 51011]

Input Connector	■ Support at least one (1) interface port as listed below: ▪ VGA ▪ DVI ▪ HDMI ▪ DisplayPort
Display Size (Diagonal)	■ At least 17 inches
Resolution	■ At least 1024 x 768 native resolution
Contrast Ratio (Typical)	■ 1000:1 or above

Others	■ Shall provide all necessary cables (e.g. power cord and charger)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D02

1.1.4 QR Code & Barcode Scanner [Item No. 51012]

Light Source	■ Laser or LED or infra-red
Scan Rate	■ At least 30 scans or decodes per second
Decoding Capability	■ Able to scan at least two (2) standard linear barcodes as listed below: ▪ Code 39 ▪ Code 128 ▪ UPC ▪ EAN
Connectivity	■ Support at least one (1) interface port as listed below: ▪ USB 3.0 ▪ RS-232
Others	■ Shall provide all necessary cables (e.g. power cord)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D08

1.1.5 Switch/Hub [Item No. 51013]

Feature	■ Provide switch/hub device with at least one (1) function as listed below: ▪ Shall be able to control and manage at least two (2) computers using a single keyboard, mouse and monitor ▪ Support USB 3.0 or better and expand a single USB port into at least four (4) USB ports
Others	■ Shall provide all necessary cables (e.g. power cord)

1.1.6 Storage Media and Card Reader [Item No. 51014]

Feature	■ Provide storage media and card reader with at least one (1) function as listed below: ▪ Storage media with at least 32GB raw capacity ▪ Card reader with support to read at least two (2) types of storage media card as listed below: ◆ SD Card ◆ Compact Flash ◆ xD Card ◆ Memory Stick, etc.
Others	■ Shall provide all necessary cables (e.g. power cord)

1.1.7 Computer Peripherals [Item No. 51015]

Feature	■ Provide at least one (1) computer peripheral which is used for desktop PC/notebook as listed below:

	▪ Keyboard ▪ Mouse ▪ Keyboard and mouse combo ▪ Docking station ▪ Webcam ▪ USB conference microphone ▪ Adapter ▪ Storage destroyer ▪ Power supply ▪ Cable connector ▪ Cables (excluding optical fibre)
Green Requirement	■ For keyboard and mouse, shall comply with mandatory requirement of Green Product Code D09

1.1.8 Image & Document Scanner [Item No. 51016]

Scan Speed for A4 Size Paper	■ At least 20ppm in 300dpi x 300dpi
Optical Scan Resolution	■ At least 600dpi x 600dpi
Bit Depth	■ At least 24-bit colour
Connectivity	■ Support at least one (1) interface port as listed below: ▪ USB 3.0 or better ▪ Ethernet 100Base-Tx ▪ Wireless
Others	■ Bundled with image scanning software, cradle, power supply and cables
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D08

1.1.9 Authentication Token [Item No. 51017]

Form Factor and Usage Type	■ Credit card size or key fob or USB token ■ Hardware device with LCD display, battery, and One-time Password (OTP) generation button ■ Event-sync based driven to generate OTP
One-time password length	■ Provide LCD display of at least 6 digits for the OTP number
Life Cycle	■ Support at least 11,000 OTP cycles
Security algorithm	■ Compliant to Initiative for Open Authentication (OATH)

1.2 Sub-Category C2 - Notebook Computer

1.2.1 Notebook Computer [Item No. 52000]*

Processor	■ At least dual-core 64-bit processor(s)
System Memory	■ At least 4GB DDR4 or better

Display	■ At least 12 inches
Display Resolution	■ At least 1920 x 1080 pixel
Internal Storage	■ At least 120GB SSD (raw capacity)
Wireless Connectivity	■ At least WLAN 802.11ac ■ At least Bluetooth 5.0 or better
Port & Slot	■ At least 1 x USB 3.0 port or better
Others	■ Shall provide power cord and charger
Operating System	■ Preloaded with one of the prevailing operating systems which can be OEM version
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D04

1.2.2 Notebook Computer Upgrade Option [Item No. 52010]

Feature	■ Provide at least one (1) notebook computer upgrade option as listed below: ▪ Memory module ▪ Hard disk drive

1.2.3 External Hard Disk [Item No. 52011]

Raw Capacity	■ At least 256GB
Connectivity	■ At least USB 3.0 or better
Others	■ With enclosure ■ Shall provide all necessary cables (e.g. USB cable, power cord, etc.)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D11

1.2.4 External Drive Enclosure [Item No. 52012]

Capacity	■ Shall be able to house and provide power for at least two (2) hard disks drive
Connectivity	■ Support at least one (1) interface as listed below: ▪ USB 3.0 or better ▪ SAS ▪ SCSI ▪ eSATA
Others	■ Shall provide all necessary cables (e.g. power cord and charger)

1.3 Sub-Category C3 – Mobile Computing Device

1.3.1 Mobile Computing Device [Item No. 53000]*

Processor	■ At least dual-core 64-bit processor(s)

Display Resolution	■ At least 1200 x 720 pixels
Internal Storage	■ At least 60GB (raw capacity)
Wireless Connectivity	■ At least WLAN 802.11ac ■ At least Bluetooth 5.0 or better
Operating System	■ Preloaded with operating system
Green Requirement	■ Tablet device shall comply with mandatory requirement of Green Product Code D10; ■ Mobile phone shall comply with mandatory requirement of Green Product Code T02

1.3.2 Mobile Computing Device Accessories [Item No. 53010]

Feature	■ Provide at least one (1) accessory which is used in the mobile computing device as listed below: ▪ Active pen ▪ Keyboard ▪ Docking station
Green Requirement	■ Keyboard shall comply with mandatory requirement of Green Product Code D09

1.4 Sub-Category C4 – Printer

1.4.1 Monochrome Laser / LED Printer [Item No. 54000]*

Print Technology	■ Laser or LED
Print Speed for A4 Size Paper	■ At least 20ppm
Resolution	■ At least 600dpi x 600dpi
Media Size	■ Support at least A4 and letter size printing
Connectivity	■ Support at least one (1) interface port as listed below: ▪ USB 3.0 or better ▪ Parallel port ▪ Wireless ▪ Ethernet 100Base-Tx ▪ 1000Base-T
Others	■ Shall provide all interface connect cables (e.g. USB cable or parallel cable)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D05

1.4.2 Monochrome Printer Accessories [Item No. 54012]

Feature	■ Shall provide at least one (1) monochrome printer accessory which is used for the printer as listed below: ▪ Paper tray ▪ Memory module ▪ Hard disk module

	▪ Finisher kit ▪ Add-on kit, etc.

1.4.3 Colour Laser / LED Printer [Item No. 54001]*

Print Technology	■ Laser or LED
Print Speed for A4 Size Paper	■ At least 20ppm in colour
Resolution	■ At least 600dpi x 600dpi
Media Size	■ Support at least A4 and letter size printing
Connectivity	■ Support at least one (1) interface port as listed below: ▪ USB 3.0 or better ▪ Parallel port ▪ Wireless ▪ Ethernet 100Base-Tx ▪ 1000Base-T
Others	■ Shall provide all interface connect cables (e.g. USB cable or parallel cable)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D05

1.4.4 Colour Printer Accessories [Item No. 54013]

Feature	■ Shall provide at least one (1) colour printer accessory which is used for the printer as listed below: ▪ Paper tray ▪ Memory module ▪ Hard disk module ▪ Finisher kit ▪ Add-on kit, etc.

1.4.5 Multifunction Monochrome Laser / LED Printer [Item No. 54010]

Print Technology	■ Laser or LED
Print Speed for A4 Size Paper	■ At least 20ppm
Resolution	■ At least 600dpi x 600dpi
Optical Scan Resolution	■ At least 600dpi x 600dpi
Media Size	■ Support at least A4 and letter size printing
Function	■ Printing, copying and scanning
Connectivity	■ Support at least one (1) interface port as listed below: ▪ USB 3.0 or better ▪ Parallel port ▪ Wireless ▪ Ethernet 100Base-Tx ▪ 1000Base-T

Others	■ Shall provide all interface connect cables (e.g. USB cable or parallel cable)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D07

1.4.6 Multifunction Colour Laser / LED Printer [Item No. 54011]

Print Technology	■ Laser or LED
Print Speed for A4 Size Paper	■ At least 20ppm in colour
Resolution	■ At least 600dpi x 600dpi
Optical Scan Resolution	■ At least 600dpi x 600dpi
Media Size	■ Support at least A4 and letter size printing
Function	■ Printing, copying and scanning
Connectivity	■ Support at least one (1) interface port as listed below: ▪ USB 3.0 or better ▪ Parallel port ▪ Wireless ▪ Ethernet 100Base-Tx ▪ 1000Base-T
Others	■ Shall provide all interface connect cables (e.g. USB cable or parallel cable)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D07

1.4.7 Inkjet Printer [Item No. 54014]

Print Technology	■ Ink
Print Speed for A4 Size Paper in Draft Mode	■ At least 20ppm in colour
Printer Resolution	■ At least 600dpi x 600dpi in colour
Colour Technology	■ At least four (4) colours (cyan, magenta, yellow and black) ■ Separate ink cartridge for each colour
Connectivity	■ Support at least one (1) interface port as listed below: ▪ USB 3.0 or better ▪ Ethernet 100Base-Tx ▪ Wireless
Paper Tray Capacity	■ Shall be able to fill at least 100 sheets of paper
Others	■ Shall provide all necessary cables (e.g. power cord)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D05

1.4.8 Barcode Label Printer [Item No. 54015]

Print Technology	■ Thermal / Direct thermal

Print Speed	■ At least 50mm per second
Print Width	■ At least 50mm
Printer Resolution	■ At least 200dpi
Barcode Support	■ Able to print at least two (2) linear or 2-dimensional bar code standard as listed below: ▪ UPC ▪ EAN ▪ Code39 ▪ Code128 or compatible
Connectivity	■ Support at least one (1) interface as listed below: ▪ USB ▪ Parallel port ▪ RS-232 ▪ Ethernet
Others	■ Shall provide all necessary cables (e.g. power cord)
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D05

1.4.9 Inkjet / Barcode Label Printer Accessories [Item No. 54016]

Add-on Kit	■ Additional kit to enrich printing, scanning or fax functions for inkjet/barcode label printers such as: ▪ Security ▪ Speed ▪ Colour ▪ Font type ▪ Paper handling, etc.

1.5 Sub-Category C5 – PC Software

Any software item under this sub-category*

1.5.1 Desktop Operating System [Item No. 55000]

Features	■ Support 64-bit processors ■ Support multiple programs running simultaneously ■ Support ISO 10646 and HKSCS coded in ISO 10646 or support GB 18030 ■ Support common networking protocols e.g. TCP/IP ■ Support energy saving feature ■ Support user logon feature for authentication purpose and support more than one (1) type of user (e.g. users, guest, root/administrator, etc.) ■ Compatible with one (1) or more web browser(s)

1.5.2 Office Automation Software [Item No. 55001]

Features	■ Provide office automation software with at least one (1) function as listed below: ▪ word processing ▪ spreadsheet calculation ▪ creating presentations ▪ creating simple database running on PC ■ Support ISO 10646 and HKSCS coded in ISO 10646 or support GB 18030

1.5.3 Security Software [Item No. 55010]

Features	■ Provide security software with at least one (1) function as listed below: ▪ Scanning, detection, anti-spam, anti-phishing, automatic cleaning, quarantining the virus including at least one (1) year signature updates for the different types of virus as listed below: ◆ worms ◆ Trojan horses ◆ spyware ◆ bots ▪ able to delete files permanently, wipe free space and wipe internet history including cache, cookies, browsing history, etc.

1.5.4 Encryption Software [Item No. 55011]

Features	■ Provide encryption software with at least one (1) function as listed below: ▪ encryption and decryption functions to data on storage devices or computer systems ▪ sign and/or encrypt email using recipient's digital certificate stored in smart card or hardware token

1.5.5 File Compression Software [Item No. 55012]

Features	■ Compress data files to save storage space ■ Support at least two (2) file formats in packing and unpacking of data as listed below: ▪ 7z ▪ Zip ▪ RAR ▪ LHA ■ Support the packing of multi-files in a single archive ■ Protect files with encryption

1.5.6 Fonts and Characters Management Utilities [Item No. 55013]

Features	■ Support at least one (1) typefaces for printer as listed below:

	▪ Medium Black ▪ Medium Kai ▪ Medium Song, etc. ■ TrueType font or equivalent ■ Support ISO 10646 and HKSCS coded in ISO 10646 or support GB 18030

1.5.7 Database Software (running on PC) [Item No. 55014]

Features	■ Provide the database engine supporting the simple database model and SQL running on PC ■ Support ISO 10646 and HKSCS coded in ISO 10646 or support GB 18030 ■ Provide interactive tools supporting data browsing, sorting and record filtering under interactive mode ■ Include tools such as graphical querying tool, report writer and form designer ■ Provide application development capability with macro language support and built-in program debugger ■ Provide database mirroring or replication

1.5.8 PDF Creation Software [Item No. 55015]

Features	■ Create PDF documents from any application that prints ■ Provide text recognition with optical character recognition ■ Protect PDF documents with encryption ■ Allow users to digitally sign PDF documents ■ Convert documents to PDF/A file format for long-term archiving

1.5.9 Project Management Software [Item No. 55016]

Features	■ Provide functions for task scheduling and support reporting and analysis ■ Shall be able to schedule tasks in Gantt chart view or PERT chart view

1.5.10 Graphics and Drawing Software [Item No. 55017]

Features	■ Provide functions for drawing and editing of images ■ Support at least two (2) of the image formats listed below: ▪ AutoCAD Drawing (DXF, DWG) ▪ Portable Network Graphics (PNG) ▪ Windows Bitmap (BMP) ▪ JPEG File Interchange Format (JPG) ▪ Graphics Interchange Format (GIF) ▪ Portable Data Format (PDF)

1.6 Sub-Category C6 – AI PC Equipment

Any hardware / software item under this sub-category*

1.6.1 AI Desktop Computer [Item No. 56000]

Central Processor Unit	■ 64-bit multi-cores processor
AI Accelerator	■ Integrated AI co-processor or discrete AI accelerator module, including Graphics Processing Unit (GPU) or Neural Processing Unit (NPU)
Memory	■ At least 16GB
Internal Storage	■ At least 512GB SSD
Others	■ Shall provide keyboard, mouse and power cord
Operating System	■ Preloaded with one of the prevailing operating systems
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D01

1.6.2 AI Notebook Computer [Item No. 56001]

Central Processor Unit	■ 64-bit multi-cores processor
AI Accelerator	■ Integrated AI co-processor or discrete AI accelerator module, including Graphics Processing Unit (GPU) or Neural Processing Unit (NPU)
Memory	■ At least 16GB
Internal Storage	■ At least 512GB SSD
Display	■ At least 12 inches
Display Resolution	■ At least 1920 x 1080 pixel
Others	■ Shall provide power cord and charger
Operating System	■ Preloaded with one of the prevailing operating systems
Green Requirement	■ Shall comply with mandatory requirement of Green Product Code D04

1.6.3 AI PC Components and Accessories [Item No. 56005]

Features	PC components and accessories supporting AI features including but not limited to: ■ AI accelerator: Graphic Processing Unit (GPU) or Neural Processing Unit (NPU) ■ Memory component: high-capacity memory or SSD ■ Power supply unit for AI Desktop Computer or AI Notebook Computer

1.6.4 AI PC Software [Item No. 56010]

Features	PC software supporting AI solutions for different application areas including but not limited to:

	■ AI-driven digital human customer service ■ AI meeting minutes summaries and communication collaboration ■ Document management and processing ■ Writing and content creation ■ Workflow management and automation ■ Creativity and promotional marketing ■ Data analysis and prediction
Other Requirements	■ The AI model(s) of the software shall be able to be installed and run on a local desktop or notebook computer

Reference

Green specifications recommended by EPD for IT products:

https://www.epd.gov.hk/epd/english/how_help/green_procure/pdf/Category%20D.pdf

https://www.epd.gov.hk/epd/english/how_help/green_procure/pdf/Category%20T.pdf

List of Technical Abbreviations

Abbreviation	Definition
1000BASE-T	IEEE 802.3 standard for 1Gbps LAN media over twisted-pair copper wiring
802.11ax	IEEE 802.11ax standard for wireless local area network
A	Ampere
AAA	Authentication, Authorization and Accounting
AC	Alternating Current
AD	Active Directory
AIX	Advanced Interactive eXecutive
ARIA	Australian Recording Industry Association
BGP	Border Gateway Protocol
BGP-4	Border Gateway Protocol Version 4
BMP	Windows Bitmap
bps	Bit-per-second
CA	Certificate Authority
Cat	Category
CD	Compact Disc
CD-ROM	Compact Disc Read Only Memory
CFM	Cubic Feet per Minute
CIFS	Common Internet File System
CISA	Certified Information Systems Auditor
CISM	Certified Information Security Manager
CISSP	Certified Information Systems Security Professional
CPU	Central Processing Unit
DAT	Digital Audio
DDoS	Distributed Denial of Service
DDR SDRAM	Double Data Rate Synchronous Dynamic Random Access Memory
DES	Data Encryption Standard

Abbreviation	Definition
DHCP	Dynamic Host Configuration Protocol
DIMM	Dual In-line Memory Module
DP	Display Port
Dpi	dots per inch
DSA	Digital Signature Algorithm
DVD	Digital Video Disc
DVD +/-R	Digital Video Disc Recordable
DVD+/-RW	Digital Video Disc Rewritable
DXF	Drawing Exchange Format
DVI	Digital Visual Interface
DWPD	Drive Writes Per Day
DWG	AutoCAD Drawing File Format
E1	E-carrier System 1
EAN	European Article Number
ECC	Error-Correcting Code
EIA	The Electronic Industries Alliance
EMSD	Electrical and Mechanical Services Department
eSATA	External Serial Advanced Technology Attachment
FIPS	Federal Information Processing Standards
FoIP	Fax over IP
FTP	File Transfer Protocol
GB	Gigabyte
GbE	Gigabit Ethernet
Gbps	Gigabit per second
GBps	Gigabyte per second
GFC	Gigabit per second Fibre Channel
GHz	Gigahertz
GIF	Graphics Interchange Format
GIS	Geographic Information System

Abbreviation	Definition
GUI	Graphical User Interface
HDD	Hard Disk Drive
HDMI	High-Definition Multimedia Interface
HIM	Hardware Interface Module
HKSCS	Hong Kong Supplementary Character Set
HP	Hewlett-Packard Company
HTML	HyperText Markup Language
HTTP	Hypertext Transfer Protocol
Hz	Hertz
IBM	International Business Machines Corporation
ICAP	Internet Content Adaptation Protocol
IDE	Integrated Drive Electronics
IDS	Intrusion Detection System
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IOS	iPhone Operating System
IP	Internet Protocol
IPS	Intrusion Prevention System
IPSec	Internet Protocol Security
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
iSCSI	Internet Small Computer System Interface
ISDN	Integrated Services Digital Network
ISL	Inter-Switch Link
ISO	International Organization for Standardization
IT	Information Technology
ITU	International Telecommunication Union
JPG	JPEG File Interchange Format
kbps	kilobit per second

Abbreviation	Definition
kpps	Kilo packets per second
KML	Keyhole Markup Language
kVA	Kilovolt-Ampere
KVM	Keyboard, video and mouse
LAN	Local Area Network
LCD	Liquid Crystal Display
LDAP	Lightweight Directory Access Protocol
LED	Light Emitting Diode
LRDIMM	Load-Reduced Dual Inline Memory Module
LTO	Linear Tape-Open
MAC	Media Access Control
MACsec	IEEE 802.1AE MAC Security standard
MB	Megabyte
Mbps	Megabit per second
MBps	Megabyte per second
Microsoft	Microsoft Corporation
MLC	Multi-level Cell
Mpps	Million packets per second
MPLS	Multiprotocol Label Switching
ms	1,000th of a second
MU-MIMO	Multi-user, multi-in and multi-out
NAS	Network-attached storage
NAT	Network Address Translation
NFS	Network File System
NVMe	Non-volatile Memory Express
OATH	Initiative for Open Authentication
OCR	Optical Character Recognition
OEM	Original Equipment Manufacturer
OGC	Open Geospatial Consortium

Abbreviation	Definition
OLAP	Online Analytical Processing
Oracle	Oracle Corporation
OS	Operating System
OSPF	Open Shortest Path First
OSPFv3	Open Shortest Path First Version 3
OST	Open Storage Technology
OTP	One-time Password
PERT	Program Evaluation Review Technique
PC	Personal Computer
PCI	Peripheral Component Interconnect
PCI DSS	Payment Card Industry Data Security Standard
PCI-E	Peripheral Component Interconnect - Express
PCI-X	Peripheral Component Interconnect Extended
PDF	Portable Document Format
PERL	Practical Extraction and Report Language
PKI	Public Key Infrastructure
PNG	Portable Network Graphics
PoE	Power-over-Ethernet
PoE+	Power-over-Ethernet Plus
POP	Post Office Protocol
ppm	pages per minute
pps	packets per second
PVC	Polyvinyl Chloride
QSFP	Quad Small Form-factor Pluggable
RADIUS	Remote Authentication Dial-In User Service
RAID	Redundant Array of Independent Disks
RAM	Random-Access Memory
RDIMM	Reduced Dual Inline Memory Module
RIP	Routing Information Protocol

Abbreviation	Definition
RIP-2	Routing Information Protocol Version 2
RJ11	6P2C connector
RJ45	Registered Jack-45
RoHS	Restriction of Hazardous Substances Directive
ROM	Read-Only Memory
rpm	revolutions per minute
RSA	Rivest-Shamir-Adleman cryptosystem
RS232	Recommended Standard 232
SAN	Storage Area Network
SAS	Serial Attached SCSI
SATA	Serial Advanced Technology Attachment
SCSI	Small Computer System Interface
SD	Secure Digital
SED	Self-Encrypted Drive
SFP	Small Form-factor Pluggable
SFP+	Enhanced Small Form-factor Pluggable
SHA	Secure Hash Algorithm
SLC	Single-level Cell
SMB	Server Message Block protocol
SNMP	Simple Network Management Protocol
SNMP-2	Simple Network Management Protocol Version 2
SQL	Structured Query Language
SSD	Solid State Disk
SSL	Secure Sockets Layer
T1	T-carrier System 1
TACACS+	Terminal Access Controller Access-Control System Plus
TB	Terabyte
TPC-C	TPC-C is an on-line transaction processing benchmark
TPM	Trusted Platform Module

Abbreviation	Definition
tpmC	TPC-C is measured in transactions per minute
U	Rack unit
UNSPSC	United Nations Standard Products and Services Code
UPC	Universal Product Code
UPS	Uninterruptible Power Supply
USB	Universal Serial Bus
UTM	Unified Threat Management
UTP	Unshielded Twisted Pair
V	Volt
VA	Voltage-Amperes
VGA	Video Graphics Array
VLAN	Virtual LAN; a logical grouping of end stations within a bridged infrastructure
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
VXLAN	Virtual Extensible Local Area Network
W	Watt
WAN	Wide Area Network
WCS	Web Coverage Services
WEP	Wired Equivalent Privacy
WLAN	Wireless LAN
WMS	Web Map Service
WPA	Wi-Fi Protected Access
WPA2	Wi-Fi Protected Access 2
XML	Extensible Markup Language