



香港普通話研習社科技創意小學

香港新界天水圍天秀路 25 號天富苑

電話 24708080 傳真 24708070

學校檔號：XPYPSSC/2021010

邀請書面報價/招標

承投「光纖到課室」網絡提升先導計劃工程

敬啟者：現誠邀 貴機構承投提供隨附的書面報價/投標附表上所列的物料或服務。倘 貴機構不擬接納部分訂貨，請於書面報價/投標附表上清楚註明。

書面報價/投標表格必須一式兩份，並放置信封內封密。信封面清楚註明：

『承投「光纖到課室」網絡提升先導計劃工程書面報價單/投標書』

書面報價單/投標書應寄往天水圍天秀路 25 號天富苑 香港普通話研習社科技創意小學，並於 2021 年 4 月 23 日(星期三)正午十二時前送達上述地址。逾期書面報價/投標，概不受理。如在該 90 天內仍未接獲訂單，則是次書面報價/投標可視作落選論。另外亦請注意，貴公司必須填妥書面報價/投標表格第 II 部分，否則標書概不受理。

倘 貴公司未能或不擬報價/投標，亦請盡快把書面報價/投標表格寄回上述地址，並列明不擬報價/投標的原因。

學校邀請書面報價/招標承投所需物品/服務時，會以*「整批」/「分組」/「分項」形式考慮接受供應商的書面報價/投標。

如有查詢，請致電 24708080 與郭楚群副校長/老峻鋒先生聯絡。專此奉達，敬祝

台安！



校長

陶群春

謹啟

2021 年 3 月 26 日

承投「光纖到課室」網絡提升先導計劃工程的書面報價/投標表格

學校名稱及地址： 香港普通話研習社科技創意小學
新界天水圍天秀路 25 號天富苑

學校檔號： XPYPSSC/2021010

截止書面報價/截標日期及時間： 2021 年 4 月 23 日(星期三)正午 12 時

第 I 部分

下方簽署人願意按照所列的價格(其他費用全免)，以及校方提供的任何圖則及/或規格，供應夾附的書面報價/投標附表上所列的全部或部分項目，而交貨期限已於正式訂單上註明。下方簽署人知悉，所有未經特別註明的項目，如已在英國標準規格內有所訂明，則須符合該等規格，書面報價單/投標書由上述截止日期起計 90 天內仍屬有效；校方不一定採納索價最低的書面報價單/投標書或任何一份書面報價單/投標書，並有權在書面報價單/投標書有效期內，採納某份書面報價單/投標書的全部或部分內容。下方簽署人亦保證其公司的商業登記及僱員補償保險均屬有效，而其公司所供應的各個項目並無侵犯任何專利權。

第 II 部分

再行確定書面報價單/投標書的有效期

有關本書面報價單/投標書的第 I 部分，現再確定本公司的書面報價單/投標書有效期由起計為 90 天。

下方簽署人亦同意，書面報價單/投標書的有效期一經再行確定，其公司就該事項註明於書面報價/投標表格內的預印條文，即不再適用。

日期： _____ 年 _____ 月 _____ 日

姓名(請以正楷填寫)： _____

簽署人： _____

職銜： _____ (請註明職位，例如董事、經理、秘書等)

上方簽署人已獲授權，代表：—

_____ 公司簽署書面報價單/投標書，該公司在
香港註冊的辦事處地址為 _____

電話號碼： _____

傳真號碼： _____

電郵地址： _____

第 III 部份

1. 《防止賄賂條例》，在學校採購過程中，如學校員工接受供應商和承辦商提供的利益，或供應商和承辦商向學校員工提供利益，均屬違法。
2. 學校員工或供應商和承辦商任何一方或雙方如有干犯上述違法行為，有關投標書將不獲考慮；即使已獲委聘，所簽訂的有關合約亦會被宣告無效。

第 IV 部份

香港普通話研習社科技創意小學 申報利益表

1. 你在香港普通話研習社科技創意小學內有沒有人或業務利益關係(註譯1)有/沒有 # 如有的話，請說明。

2. 你的家人或親屬(註譯 2)有沒有擔任此學校的現任職位？
有 / 沒有 #
如有的話，請提供姓名及關係。

註譯

(註譯 1) 個人利益包括你參予經營 / 承包學校的各項服務等。

(註譯 2) 你的家人或你的親屬包括：

- (a) 你的配偶；
- (b) 你的父母；
- (c) 你的配偶父母；
- (d) 你的兄弟姊妹及其配偶；以及
- (e) 你或你的配偶的子女及其配偶。

申報人簽署

申報人姓名

日期

請將不適用的刪去

書面報價/投標附表

ITEM	項目內容	數量	品牌及型號	價錢 (港幣\$)		
				全數付費	三年分期 (年價)	五年分期 (年價)
1	<u>Necessary item</u>					
1.1	Core Switch ¹					
1.2	AC power module					
1.3	Security Gateway ²					
1.4	10GBASE SFP+ Optical Stack Cable (included both side transceivers), 1 Meter					
	Sub-total:					
2	<u>Cloud Management Service³</u>					
	Sub-total:					
3	<u>Optional item</u>					
3.1	<u>G/F</u>					
3.1.1	Optical network unit ⁴					
3.1.2	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC).					
3.1.3	Wi-Fi 6 (802.11ax) Indoor Wireless Access Point ⁵					
3.1.4	OS2 Fibre with PVC conduit					
	Sub-total:					
3.2	<u>I/F</u>					
3.2.1	Optical network unit ⁶					
3.2.2	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC).					
3.2.3	10GBASE-SR, SFP+ Transceiver (1310nm, 10km, LC)					
3.2.4	24-Port Switch ⁷					
3.2.5	48-Port Switch ⁸					
3.2.6	Wi-Fi 6 (802.11ax) Indoor Wireless Access Point ⁹					
3.2.7	Indoor high-density 802.11ax wireless Access Point ¹⁰					
3.2.8	OS2 Fibre with PVC conduit					
	Sub-total:					
3.3	<u>2/F</u>					
3.3.1	Optical network unit ¹¹					
3.3.2	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC).					
3.3.3	Wi-Fi 6 (802.11ax) Indoor Wireless Access Point ¹²					
3.3.4	OS2 Fibre with PVC conduit					
	Sub-total:					

¹ Please read “Appendix B: Core Switch” for the minimum requirements

² Please read “Appendix B: Security Gateway” for the minimum requirements

³ Please read “Appendix B: Cloud Management Service” for the minimum requirements

⁴ Please read “Appendix B: Optical network unit” for the minimum requirements

⁵ Please read “Appendix B: Wi-Fi 6 (802.11ax) Indoor Wireless Access Point” for the minimum requirements

⁶ Please read “Appendix B: Optical network unit” for the minimum requirements

⁷ Please read “Appendix B: 24-Port Switch” for the minimum requirements

⁸ Please read “Appendix B: 48-Port Switch” for the minimum requirements

⁹ Please read “Appendix B: Wi-Fi 6 (802.11ax) Indoor Wireless Access Point” for the minimum requirements

¹⁰ Please read “Appendix B: Indoor high-density 802.11ax wireless Access Point” for the minimum requirements

¹¹ Please read “Appendix B: Optical network unit” for the minimum requirements

¹² Please read “Appendix B: Wi-Fi 6 (802.11ax) Indoor Wireless Access Point” for the minimum requirements

ITEM	項目內容	數量	品牌及型號	價錢 (港幣\$)		
				全數付費	三年分期 (年價)	五年分期 (年價)
3.4	3/F					
3.4.1	Optical network unit ¹³					
3.4.2	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC).					
3.4.3	Wi-Fi 6 (802.11ax) Indoor Wireless Access Point ¹⁴					
3.4.4	OS2 Fibre with PVC conduit					
	Sub-total:					
3.5	4/F					
3.5.1	Optical network unit ¹⁵					
3.5.2	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC).					
3.5.3	Wi-Fi 6 (802.11ax) Indoor Wireless Access Point ¹⁶					
3.5.4	OS2 Fibre with PVC conduit					
	Sub-total:					
3.6	5/F					
3.6.1	Optical network unit ¹⁷					
3.6.2	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC).					
3.6.3	Wi-Fi 6 (802.11ax) Indoor Wireless Access Point ¹⁸					
3.6.4	OS2 Fibre with PVC conduit					
	Sub-total:					
3.7	6/F					
3.7.1	Optical network unit ¹⁹					
3.7.2	1000BASE-LX, SFP Transceiver, SM (1310nm, 10km, LC).					
3.7.3	Wi-Fi 6 (802.11ax) Indoor Wireless Access Point ²⁰					
3.7.4	OS2 Fibre with PVC conduit					
	Sub-total:					
4	Project Commitment					
4.1	At least one Project Kickoff Meeting (On-site meeting is suggested for the scope of actual environment)					
4.2	All the equipment should be unboxed and powered by supplier, which make sure no responsibility for user if any damage caused.					
4.3	Supplier should make sure the network is secured, i.e., well protection for incoming network and notification when the network is under attack or has potential risk(s)					
4.4	Apply Switch/ Controller configuration refers to Switchport Assignment Document with VLANs.					
4.5	Supplier should upgrade the firmware of all the equipment to recommended version before setting up					
4.6	Onetime configuration with SSIDs that suitable for any end user					
4.7	Configure network, and routing settings properly					
4.8	Implement the Switch/ Router/ Controller into production network					
4.9	Backup configuration files for the node of the above.					
4.10	Supplier should provide at least 3-year warranty for hardware on-site maintenance and sufficient					

¹³ Please read “Appendix B: Optical network unit” for the minimum requirements

¹⁴ Please read “Appendix B: Wi-Fi 6 (802.11ax) Indoor Wireless Access Point” for the minimum requirements

¹⁵ Please read “Appendix B: Optical network unit” for the minimum requirements

¹⁶ Please read “Appendix B: Wi-Fi 6 (802.11ax) Indoor Wireless Access Point” for the minimum requirements

¹⁷ Please read “Appendix B: Optical network unit” for the minimum requirements

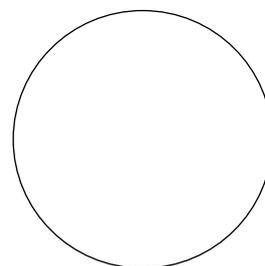
¹⁸ Please read “Appendix B: Wi-Fi 6 (802.11ax) Indoor Wireless Access Point” for the minimum requirements

¹⁹ Please read “Appendix B: Optical network unit” for the minimum requirements

²⁰ Please read “Appendix B: Wi-Fi 6 (802.11ax) Indoor Wireless Access Point” for the minimum requirements

ITEM	項目內容	數量	品牌及型號	價錢 (港幣\$)		
				全數付費	三年分期 (年價)	五年分期 (年價)
	technical support					
4.11	Supplier should label all the equipment per user request and requirement					
4.12	After all the set up were completed, user acceptance test (UAT) is required to conduct with user					
4.13	At least half-day commissioning/UAT and hand-over					
4.14	Supplier is required to prepare the UAT document(s) and to be approved by user prior to the UAT					
4.15	Provide necessary training to our staff to operate the systems after the UAT					
4.16	If all the UAT items were passed, the UAT document(s) should pass to user and part of the tender (installation and configuration) will be completed.					
4.17	After setting up, the working area should be clean and tidy up					
4.18	Supplier should guarantee to provide well-done solution and no missing parties.					
4.18.1	Supplier should have a professional planning of the whole project, e.g. locate the equipment properly, provide sufficient qualities of equipment, and be compatible with the existing network...which make sure there are optimal internet experience for the users in the network covered.					
4.18.2	No additional fee can be added after receiving the letter of acceptance and fully complete the task mentioned in letter of acceptance.					
4.19	Adjust and fine-tune the network if user needed					
4.19.1	Firmly mount for all the equipment safely and provide sufficient protection					
4.20	Provide any suitable document(s) for the project that user needed					
4.20.1	Provide a clear schedule of the project within 30 days after receiving the letter of acceptance					
4.20.2	State the location of APs and main equipment clearly on Appendix A					
<u>Remark:</u>						
1. If the statements of quoting are attached, not written on above, the statements of attachment are suggested to be itemised following the structure shown above, i.e., lamp sum quotation is not suggested.						
2. Supplier agrees to bear full responsibility of all the items written above by signing below						
3. Supplier should equip with necessary safety tools, such as, but not limited to, working platform, safety belt and others, such that to comply with school and regular safety standard.						
4. Payment period: 1 st September 2021 – 31 st March 2022						
5. Date of completion (including UAT): 20 th August 2021						

本公司/本人明白，如收到學校訂單後未能供應書面報價/投標書上所列物料或服務，本公司/本人須負責賠償學校從另處採購上述物料或服務的差價。



公司印鑑

供應商名稱： _____

獲授權簽署報價單/投標書的代表的姓名及署名

姓名(請以正楷填寫)： _____ 簽署： _____

日期： _____

Appendix A (Floor Plan of school campus)

Xianggang Putonghua Yanxishe Primary School of Science And Creativity
Floor Plan

6/F	602室	前梯	603室	604室	605室	606室	607室	608室	女廁	潔具	男廁	後梯
5/F	502室		503室	504室	505-6室	507室	508室	509室	女廁	潔具	男廁	
4/F	402室		403室	404室	405室	406室	407室	408室	女廁	潔具	男廁	
3/F	302室		303室 圖書館	304-5室 英語室	306室	307室	308室 常識室	女廁	潔具	男廁		
2/F	202室		203室	204室	205室	206室	207室	208-9室 校史館	女廁	潔具	男廁	
1/F	102室 電腦室		禮堂後座	215室 視藝室	214室 音樂室	103室 校董室	104室 校務處	121室 電腦室	122室 伺服器室	108室 教員室	女廁	
	升降機											
		117室 禮堂					107室 創意科學園	114室 教員室			113室 教具室	
G/F		前梯	G02 活動室	潔具室	女廁	女更衣室	輔導室	男廁	後梯			
		詢問處										
		講台										
輔導室		兩天操場一						兩天操場二				
環保 資源室							講台					
		小食部	體育室	樓梯								
		研習社 辦事處	家教會 辦事處	工友 宿舍				籃球場				

Appendix B (List of minimum requirements of the special equipment)

Special equipment	Minimum requirements
Core Switch	<p>1. Hardware Specifications</p> <ol style="list-style-type: none"> 1.1. Shall provide at least 28 10/100/1000BASE-X ports (SFP, LC), AC power supply; At least 4 1G/10GBASE-X SFP+ ports 1.2. Shall provide at least 2 extension slots 1.3. Shall provide at least 598Gbps switching capacity 1.4. Shall provide at least 252Mpps packets forwarding rate 1.5. Shall support jumbo frame (9216 bytes) 1.6. With environmental protection design, less than 70W at full load 1.7. Shall have high anti-corrosion ability with conformal coating to fit different environments, extending equipment lifetime 1.8. Shall provide at least 64K MAC address capability. Test report from third party authority should be provided as reference 1.9. Shall provide at least 10K ARP entry capability. Test report from third party authority should be provided as reference 1.10. Shall support at least 12K IPv4 and 6K IPv6 routing table <p>2. Product Features</p> <ol style="list-style-type: none"> 2.1. Shall support and bundled with IPv4 routing protocols such as static routing, RIPv1/v2, OSPF v1/v2, BGP4, etc. 2.2. Shall support and bundled with IPv6 routing protocols such as RIPng, BGP4+, OSPFv3, etc. 2.3. Shall support IEEE 802.3ad Link Aggregation with maximum aggregation of 8 ports 2.4. Shall support Link Layer Discovery Protocol (LLDP) 2.5. Shall provide at least 16K MAC address capability 2.6. Shall support VLAN IDs in the full range of 1 to 4094 allowed by the IEEE 802.1Q standard; Shall support port-based VLAN and MAC-based VLAN 2.7. Shall support Super VLAN and Guest VLAN 2.8. Shall support Basic QinQ and Flexible QinQ 2.9. Shall support N:1 VLAN switching and 1:1 VLAN switching 2.10. Shall support IEEE 802.1d Spanning Tree Protocol (STP) and IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) 2.11. Shall support 802.1s Multiple Spanning Tree Protocol (MSTP). Shall support 64 instances for MSTP 2.12. Shall support Port Fast, BPDU Guard, and BPDU Filter 2.13. Shall support one-to-one, many-to-one, one-to-many and flow-based mirroring; Support RSPAN and ERSPAN 2.14. Low-carbon and green, support IEEE 802.3az energy saving standard 2.15. Shall support port sleep 2.16. Shall support Smart Temperature Control: fan speed auto-adjustment, fan malfunction alerts and fan status check 2.17. Shall support cable testing. The product should be able to detect "normal", "short-circuit", "open-circuit" and "half-cut" status; Shall be able to detect the exact location of faults 2.18. Shall support SDN OpenFlow 1.3 standard, SDN and SDN Ready. Test report from third party authority should be provided as reference 2.19. Shall be no additional license for all hardware supported features, including but not limited to any Advanced L3 routing, Stacking, or Management features, etc.” <p>3. Multicast</p> <ol style="list-style-type: none"> 3.1. Shall support IGMP (v1/v2/v3) and IGMP snooping (v1/v2/v3) 3.2. Shall support IGMP filter and IGMP fast leave 3.3. Shall support multicast routing protocols (PIM-DM, PIM-SM, PIM-SSM); PIM for IPv6; MSDP

Special equipment	Minimum requirements
	<p>3.4. Shall support MLD and MLD snooping</p> <p>4. Quality of Services</p> <p>4.1. Shall support IEEE 802.1p for traffic class expediting and dynamic multicast filtering</p> <p>4.2. Shall support Differentiated Services Code Point (DSCP) field in the header of IP packets for packet classification purposes</p> <p>4.3. Shall support policy-based traffic classification based on Layer 2/3/4-defined traffic flows.</p> <p>4.4. Shall support SP/WRR/DRR queue scheduling mechanisms</p> <p>4.5. Shall support input/output port-based speed limit, the granularity of which should be no more than 64Kbps; Shall support input/output traffic-based speed limit, the granularity of which should be no more than 8Kbps</p> <p>4.6. Shall support at least 8 queues on egress ports</p> <p>5. Security</p> <p>5.1. Shall provide at least 10K ARP entry capability</p> <p>5.2. Shall support MAC address filtering</p> <p>5.3. Shall support at least 3.5K Access Control List (ACL) entries</p> <p>5.4. Shall support Hardware-based Access Control Lists (ACLs): Standard IP ACL, Extended IP ACL, Extended MAC ACL and IPv6 ACL</p> <p>5.5. Shall support ACL hit-counting feature for all matched packets</p> <p>5.6. Shall support dynamic MAC address mirroring and port protection</p> <p>5.7. Shall support hardware ARP-check and Dynamic ARP Inspection (DAI) to prevent ARP spoofing</p> <p>5.8. Shall support IEEE 802.1X and Web Authentication.</p> <p>5.9. Shall support multiple authentication modes in 802.1x Host Mode, which allows multiple authenticated clients (multiple dot1x and MAB clients) to be authenticated on the same switch access port concurrently</p> <p>5.10. Shall have CPU protection mechanism that distinguishes the data flows sent to the CPU, which are processed according to their priorities, and implements limitations on the bandwidth rate as needed. Test report from third party authority should be provided as reference</p> <p>5.11. Shall have network foundation protection mechanism that protects switch processor and bandwidth so that normal packet forwarding and protocol are guaranteed. Test report from third party authority should be provided as reference</p> <p>5.12. Shall support Dynamic Host Configuration Protocol (DHCP) client, relay, snooping, and snooping trust</p> <p>5.13. Shall be configured as DHCP Server</p> <p>6. Reliability</p> <p>6.1. Shall support virtualization switching unit (VSU) or stacking technology, providing single IP management, single MAC address table and distributed forwarding across VSU members. The VSU can be realized with either 10GE or 40GE ports. 4 10GE ports can be aggregated together as the VSU link. Shall support up to 9 stack members</p> <p>6.2. Shall support Rapid Link Detection Protocol (RLDP)</p> <p>6.3. Shall support Rapid Uplink Protection Protocol (REUP) dual-link fast switching technology</p> <p>6.4. Shall support ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)</p> <p>6.5. Shall support high availability including but not limited to VRRP and BFD</p> <p>6.6. With modular design, supporting hot-patch, 1+1 power module redundancy and hot swappable components (any devices leaving or joining the virtualized network cause zero impact on other devices; the restart process does not affect the existing service forwarding)</p> <p>6.7. Shall support modular redundant power supply (internal)</p>

Special equipment	Minimum requirements	
	<p>6.8. Shall support maximum power consumption of less than 55W</p> <p>6.9. Dimensions should be below 440× 300 × 44mm (WxDxH)</p> <p>6.10. Shall be rack-mountable with 1U height</p> <p>6.11. Shall be RoHS compliance</p> <p>7. Manageability</p> <p>7.1. Shall support SNMPv1/v2/v3, CLI(Telnet/Console), RMON(1,2,3,9), SSH, Syslog, NTP/SNTP, FTP, TFTP, Web</p> <p>7.2. The switch can be managed by public cloud</p> <p>7.3. Shall support sFlow, traffic sampling of the switch can be performed via data stream random sampling. Test report from third party authority should be provided as reference</p> <p>7.4. Cloud Management¹</p> <p>7.4.1. Shall be no additional license</p> <p>7.4.2. Shall support switch ports status monitoring, including RX/TX speed and packet each port</p> <p>7.4.3. Shall support switch CPU, Memory, temperature, flash usage and PoE power usage monitoring</p> <p>7.4.4. Shall support VLAN management for each port</p> <p>7.4.5. Shall support syslog, SNMP, NTP, DNS, NFPP and IGMP Snooping configuration</p> <p>7.4.6. Shall support auto-propose of device firmware version</p>	
Optical network Unit	<ol style="list-style-type: none"> 1. Switching capacity 2. Packet forwarding rate 3. MAC address table size 4. Number of VLANs 5. PoE 6. MAC address 7. Spanning tree 8. ACL 9. QoS 10. Security 11. Management 12. DHCP 13. Operating temperature 14. Storage temperature 15. Operating humidity 16. Storage humidity 	<p>192Gbps</p> <p>15Mpps</p> <p>8K</p> <p>4094</p> <p>8 Base-T ports (support PoE and PoE+)</p> <p>Maximum PoE / PoE+ output power per switch: 125W</p> <p>Maximum output power per port: 30W</p> <p>Support static MAC address, MAC address filtering</p> <p>Support STP, RSTP</p> <p>Support IP standard ACL, MAC extended ACL, IP extended ACL, Port ACL for Layer 2 ports</p> <p>Support Port-based speed limit (ingress/egress)</p> <p>Support Port protection, Hardware CPP</p> <p>Support Web management, Provider's Cloud and Provider's Cloud app management²</p> <p>Support DHCP snooping</p> <p>0~50°C</p> <p>-40~70°C</p> <p>10% to 90% RH</p> <p>5% to 90% RH</p>
Security Gateway	<p>1. Hardware Requirements</p> <p>1.1. Product specifications and performance</p> <p>1.1.1. Should support at least 8 fixed 1000BASE-T ports, 1 fixed 1000BASE-X port and 1 fixed 10GBASE-X port.</p> <p>1.1.2. Should provide standard 1U chassis and multi-core non-x86 architecture.</p> <p>1.1.3. Should support 1 hard disk of at least 1TB storage size.</p> <p>1.1.4. Should support 1 power supply with power consumption less than 25W.</p>	

¹ Please read “Cloud Management Service” for the details

² Please read “Cloud Management Service” for the details

Special equipment	Minimum requirements
	<p>1.1.5. Should support at least 2GB memory.</p> <p>1.1.6. Should support 2000 concurrent users and at least 6000Mbps (1518 Bytes) or 3725Mbps (512Bytes) throughput.</p> <p>1.1.7. Should support max concurrent session up to 600K</p> <p>2. Software Requirements</p> <p>2.1. Routing optimization</p> <p>2.1.1. Should provide at least 6 ports as WAN ports for multi-link access.</p> <p>2.1.2. Should support multiple Internet access modes such as static IP, DHCP and PPPoE dial-up connection.</p> <p>2.1.3. Should support multiple routing protocols such as static routing, RIP (V1/V2/V3) and OSPF.</p> <p>2.1.4. Should support multi-link load balancing of multiple modes such as bandwidth-based and load-based to ensure the reasonable bandwidth allocation for multiple external network links.</p> <p>2.1.5. Should support application-based routing based on applications such as communication and video app.</p> <p>2.1.6. Should support graphical display for the results of application-based routing.</p> <p>2.1.7. Should support link bypass and regular link inspection. When the link is abnormal, it should be shut down in time so that the applications can pass through other normal links.</p> <p>2.2. User management</p> <p>2.2.1. Should support DHCP and provide DHCP service for the intranet.</p> <p>2.2.2. Should support DHCP address pool allocation status and generation of IP and MAC correspondence list.</p> <p>2.2.3. Should support user account creation with IP, MAC and IP-MAC binding.</p> <p>2.2.4. Should support batch creation of user accounts through texts and forms, as well as batch creation of accounts, passwords, and full paths.</p> <p>2.2.5. Should support local web authentication and integrated authentication with external authentication server.</p> <p>2.2.6. Should support local user authentication, LDAP authentication and Microsoft AD single sign-on.</p> <p>2.2.7. Should support local guest voucher authentication processing by integration with cloud-based voucher management system; the voucher can limit the guest data usage and network access duration.</p> <p>2.3. Application recognition (DPI) and flow control management</p> <p>2.3.1. Should support traffic identification and accurately identify network applications to guarantee system bandwidth for key services with the comprehensive application protocol library.</p> <p>2.3.2. Should support multiple built-in flow control policy templates including the entertainment template, office template, expert template, etc. to achieve one-click flow control enablement.</p> <p>2.3.3. Should support custom categorization of applications and divide the applications into the guaranteed key application group and blocked application group.</p> <p>2.3.4. Should support at least 120 application protocol identification and provide at least 43 application categories.</p> <p>2.3.5. Should support flow control bandwidth upgrade feature. After bandwidth upgrade, the customer only needs to modify the total bandwidth. The policies are automatically updated according to the existing ratio without the need to adjust every single policy.</p> <p>2.3.6. Should support visualized monitoring of VPN traffic.</p> <p>2.3.7. Should support flow control of VPN traffic.</p> <p>2.3.8. Should support time-based flow control with accuracy up to minutes.</p>

Special equipment	Minimum requirements
	<p>2.3.9. Should support more than 10 time periods for time-based flow control.</p> <p>2.3.10. Should support concurrent session limit and provide the current concurrent session information as reference for the policy adjustment.</p> <p>2.3.11. Should support traffic comparison before and after flow control.</p> <p>2.4. Online behavior management and content audit</p> <p>2.4.1. Should support time-based HTTP traffic management policy with accuracy up to minutes.</p> <p>2.4.2. Should support blacklist and whitelist of URLs and user/time-based URL filtering.</p> <p>2.4.3. Should support URL filtering policy. After matching with the blacklist and whitelist, users can choose whether to record it in the log.</p> <p>2.4.4. Should support prompt display after the HTTP access is blocked to prevent internal users from trying repeatedly.</p> <p>2.4.5. Should support per-user search feature for the behavioral management policy.</p> <p>2.4.6. Should support custom website categorization.</p> <p>2.4.7. Should support URL filtering and auditing, with built-in URL Chinese database.</p> <p>2.4.8. Should support lifetime free upgrade for the URL database, application classification library, address library and content audit signature database. Support automatic remote HTTP upgrade for the URL database and application signature database.</p> <p>2.4.9. Should support https auditing and ranking of the accessed URLs.</p> <p>2.5. Service acceleration</p> <p>2.5.1. Should support application cache acceleration (passive caching), which can cache the apps (iOS and Android) that users have accessed to local, and Microsoft Windows System Patches so that other users accessing the same app and patches can download locally, thus improving the download speed.</p> <p>2.5.2. Should support accurate caching of specified apps for application cache acceleration (passive caching) to avoid the waste of local storage.</p> <p>2.5.3. Should provide at least 100GB Cache capacity resource per device</p> <p>2.6. Network security</p> <p>2.6.1. Should support interface access control (ACL), which can filter and block specific ports and IP, as well as reflexive ACL.</p> <p>2.6.2. Should support ping blocking and blacklisted website blocking to ensure the device security.</p> <p>2.6.3. Should support protection against ARP spoofing, static ARP binding, disabling of ARP learning, and effective ARP mapping and binding. Screenshots of the device configuration interface should be provided with the manufacturer's official seal.</p> <p>2.6.4. Should support IPsec VPN and provide access authorization for at least 1000 IPsec VPNs.</p> <p>2.6.5. Should support automatic topology generation after the establishment of the IPsec VPN, so as to facilitate the online status monitoring of all devices.</p> <p>2.7. Device management and monitoring</p> <p>2.7.1. Should support the display of CPU and memory usage on the web interface.</p> <p>2.7.2. Should support web management through HTTPS and HTTP.</p> <p>2.7.3. Should support SNMPv2/ v3 and multiple traps reception configuration. Screenshots of the device configuration interface should be provided with the manufacturer's official seal.</p> <p>2.7.4. Should support unified cloud operation and maintenance and provide a lifetime free network management platform for unified management of devices, not limited to switches, wireless access points, and security gateway.</p>

Special equipment	Minimum requirements
	<p>2.7.5. The cloud platform³ should support management of multiple devices using the same account.</p> <p>2.7.6. Should support configuration backup and restore by cloud management system and support changes comparison for two specific versions of backup configs.</p> <p>2.7.7. Should support automatic secure tunnel connection from cloud to the local gateway, ease for remote management and troubleshooting for the network administrator.</p>
Access Point	<p>1. Hardware Specifications</p> <p>1.1. Support Wi-Fi 6 standard (IEEE 802.11ax), dual-radio dual-band, concurrent 802.11ax and 802.11a/b/g/n/ac</p> <p>1.2. Support total 4 spatial streams, 2×2:2 in 2.4GHz, 2×2:2 in 5GHz</p> <p>1.3. Support dual 5G radio mode operation for high-density environment</p> <p>1.4. Maximum throughput (5G+5G mode) per AP at 2.4Gbps</p> <p>1.5. Transmit power ≤20dBm</p> <p>1.6. Provide 1 10/100/1000Base-T Ethernet uplink port (PoE In) and 1 console port</p> <p>1.7. Support PoE (802.3af/802.3at), power consumption <12.95w, also support local power supply.</p> <p>1.8. Support PoE 802.3af with full spectrum radio operation</p> <p>1.9. Support integrated antenna design</p> <p>1.10. Support reset button to restore factory default settings</p> <p>1.11. Support Anti-theft Lock</p> <p>1.12. Support operating temperature: -10°C to 50°C, operating humidity: 5% to 95% (non-condensing)</p> <p>1.13. Height of the AP (excluding the mount kit) ≤26mm</p> <p>2. Product Features</p> <p>2.1. Support ≥32 BSSIDs per AP</p> <p>2.2. Working with a wireless controller, the product should support auto recognition of mainstream operating systems such as iOS, Android and Windows, etc. Support a self-adaptive authentication page that fits any screen size for easy access. Provide technology white paper as proof.</p> <p>2.3. Upon AC failure, the AP should switch to smart forwarding mode to maintain data transmission. The function ensures no service interruption for wireless users. Reserve the right to test.</p> <p>2.4. Support FAT/FIT modes switching. When operating in FIT mode, the AP can communicate with the AC via CAPWAP.</p> <p>2.5. Support IPv6 technologies including IPv6 traversal and IPv6 end device access authentication</p> <p>2.6. Support PSK, MAC, web, 802.1X authentication modes</p> <p>2.7. Support WPA (TKIP) , WPA-PSK, WPA2 (AES) , WPA3, WEP (64/128 bits) data encryption</p> <p>2.8. Should support LLDP, LLDP-MED, LLDP-POE device discovery protocol</p> <p>2.9. Support Telnet, SSH, TFTP, Web management protocol</p> <p>2.10. Support SNMPV1, V2c, V3 network management protocol</p> <p>2.11. Support PPSK or equivalent feature, WLAN Controller provide a one-time wireless password every user by batch, the device hardware MAC Address will be bound automatically, and the user cannot share their own password to other devices</p> <p>2.12. Working with a wireless controller, support below related guest Wi-Fi access control feature without additional cost, including but not limited to guest captive portal, 1-click login with T&C acceptance, voucher (access code) with time and rate-limit control, Facebook and User Account authentication feature,</p>

³ Please read “Cloud Management Service” for the details

Special equipment	Minimum requirements
	<p>etc.; The provided guest portal should be self-adaptive that fits any mainstream mobile smart device screen size for easy access.</p> <p>2.13. The AP can be managed by public cloud and mobile APP management without additional cost or licenses, features including but not limited to: QR-Code scan device provisioning, wireless SSID configuration and real topology; operating status monitoring and alert; 1-click radio RRM optimization, network healthiness diagnosis. (all related licenses should be included)</p> <p>2.14. The public cloud should support below remote device operation & maintenance (including access point, switches, gateway) features, including but not limited to: Email alarm, dynamic Web Secure Tunnel to remote device, Web CLI (command-line), remote device reboot, schedule RRM planning and optimization, etc.</p> <p>2.15. The AP should support WIDS (Wireless Intrusion Detection System) feature, including RF interference tracking, rogue AP detection & containment, anti-ARP spoofing, etc.</p> <p>2.16. The AP factory default firmware can be managed by public cloud licenses or on-premises hardware controller, without further manual firmware upgrade</p> <p>3. Product Certification</p> <p>3.1. Provide a copy of the radio communications apparatus approval certificate. The product model should be consistent with that of the tender product.</p> <p>3.2. Provide Wi-Fi 6 Certification from Wi-Fi Alliance (WFA) of the AP. The product model should be consistent with that of the tender product.</p> <p>3.3. Provide IP41 dustproof and waterproof testing report of the product. Guarantee the tender product model is consistent with that on the report to proof that the product can work properly in relatively harsh environments.</p> <p>3.4. The AP should possess a test report issued by an international third-party authority for >950Mbps single-client 5GHz radio downstream throughput and with 1024 client connections.</p> <p>4. Warranty</p> <p>4.1. The AP should provide 3 years original back-to-back factory hardware warranty</p>
24-Port Switch	<p>1. Hardware Specifications</p> <p>1.1. Should provide at least 256Gbps switching capacity</p> <p>1.2. Should provide at least 96Mpps packets forwarding rate</p> <p>1.3. Should have at least 24 (twenty-four) fixed 10/100/1000Base-T ports, at least 4 fixed 1G SFP non-combo ports.</p> <p>1.4. Should total 370W PoE/PoE+/HPoE budget output power</p> <p>1.5. Should all 24 BASE-T ports support PoE (up to 24 ports) and PoE+ (up to 12 ports)</p> <p>1.6. Should all ports from Port 1-4 support HPoE output power of up to 60W per port</p> <p>1.7. Should be through the same brand of front-end adapter to achieve common AC 24V, DC 12V and other specifications of the non-POE terminal to remote power supply</p> <p>1.8. Should support panel comes with function of one key to view POE power supply status, attach with the description, actual picture and official website screenshots of the product (including links).</p> <p>2. Product function</p> <p>2.1. Should support to implement static routing for IPv4 and IPv6.</p> <p>2.2. Should support Static Routing, RIP, OSPFv1/v2, RIPng, OSPFv3</p> <p>2.3. Should provide at least 16K MAC address capability, Should provide at least 1000 ARP entry capability, Should provide at least 500 FIB entry capability, test report from third party authority should be provided as reference.</p> <p>2.4. Should support to implement hardware ARP-check and Dynamic ARP Inspection (DAI) to prevent ARP spoofing</p>

Special equipment	Minimum requirements
	<p>2.5. Should support IP standard, IP extension, MAC extension, access control list based on expert level, ACL80, IPV6ACL, VLAN-based, port-based, protocol-based, global-based, and support ACL Logging, ACL Counter, ACL Remark, ACL redirection.</p> <p>2.6. Should support input/output port-based speed limit, the granularity of which should be no more than 64Kbps; Should support input/output traffic-based speed limit, the granularity of which should be no more than 8Kbps.</p> <p>2.7. Should support one-to-one, many-to-one, one-to-many and flow-based mirroring; and support to implement RSPAN and ERSPAN</p> <p>2.8. Should support to implement QinQ and flexible QinQ, and support to 1 : 1 and N : 1 VLAN exchange.</p> <p>2.9. Support, for CPU protection mechanism, can limit the illegal attacks on the CPU, to protect CPU from attacking and make switch stable.</p> <p>2.10. Should support to implement virtualization switching technology, support virtual 9 physical switches into 1 logical switch, manageable by single IP and single MAC address table, and the stacking failover /convergence time less than 30ms, test report from third party authority should be provided as reference.</p> <p>2.11. Should support ITU-T G.8032 Ethernet Ring Protection Switching (ERPS), and the convergence time of the link fault is no more than 50ms.</p> <p>2.12. Should support IEEE 802.3az energy saving standard</p> <p>2.13. Should support port sleep</p> <p>2.14. Should support modular operating system, support for a single module hot patch, failure module upgrade does not affect the normal operation and business forwarding of other processes. test report from third party authority should be provided as reference.</p> <p>2.15. Should support smart temperature control, fan speed auto-adjustment, fan fault detection, fan status query and other operations</p> <p>2.16. Should support cable testing. The product should be able to detect "normal", "short-circuit", "open-circuit" and "half-cut" status; should be able to detect the exact location of faults</p> <p>2.17. Should support the time-power-on and time-power-off operation, in order to flexibly control the working status of the terminal, attach with the official website screenshots of the product (including links).</p> <p>2.18. Should support to implement SDN and should support OpenFlow 1.3, test report from third party authority should be provided as reference.</p> <p>2.19. Should support at least 6kV lightning surge protection, each additional 1kV, plus 2 points, attach with the official website screenshots of product (including links)</p> <p>2.20. Should have high anti-corrosion ability with conformal coating to fit different environment, extending equipment lifetime.</p> <p>3. Manageability</p> <p>3.1. Should support SNMPv1/v2C/v3, CLI(Telnet/Console), RMON (1,2,3,9), SSH、Syslog, NTP/SNTP, FTP, TFTP, Web</p> <p>3.2. The switch can be managed by public cloud</p> <p>4. Cloud Management</p> <p>4.1. Should be no additional license</p> <p>4.2. Should support switch ports status monitoring, including RX/TX speed and packet each port</p> <p>4.3. Should support switch CPU, Memory, temperature, flash usage and PoE power usage monitoring</p> <p>4.4. Should support VLAN management for each port</p> <p>4.5. Should support syslog, SNMP, NTP, DNS, NFPP and IGMP Snooping configuration</p>

Special equipment	Minimum requirements
	4.6. Should support auto-propose of device firmware version
48-Port Switch	<p>1. Hardware Specifications</p> <p>1.1. Should support a minimum switching capacity of 264Gbps</p> <p>1.2. Should provide at least 131Mpps packets forwarding rate.</p> <p>1.3. Should have at least 16K MAC address table and 1000 ARP table and 500 FIB table</p> <p>1.4. Should provide at least 48 ports 10/100/1000BASE-T(RJ45) and 4 ports 1G/10GBASE-X (SFP+, LC), AC power supply</p> <p>1.5. Should support at least 6kV lightning surge protection</p> <p>1.6. The operating temperature of the switch should be between 0 to 50°C.</p> <p>2. Product function</p> <p>2.1. Should support IPv4/IPv6 routing protocol, include static routing, RIPv1/RIPng, OSPFv2/OSPFv3</p> <p>2.2. Should support hardware ARP-check and Dynamic ARP Inspection (DAI)to prevent ARP spoofing</p> <p>2.3. Should support but not limited to IP Standard, IP extension, Expert ACL, ACL80, IPV6ACL, (VLAN-based, Port-based, Protocol-based, Global-based) ACL, ACL Logging, ACL Counter, ACL Remark, ACL redirection</p> <p>2.4. Should support one-to-one, many-to-one, one-to-many and flow-based mirroring; and support to implement RSPAN and ERSPAN</p> <p>2.5. Should support QinQ and flexible QinQ, and 1 : 1 VLAN Switching</p> <p>2.6. Should support CPU Plane Protection in hardware</p> <p>2.7. Should support Network Foundation Protection Policy feature for automatic network security protection</p> <p>2.8. Should support sFlow</p> <p>2.9. Should have Virtualization Switching Unit (VSU) stacking technology, features including but not limited to: Support up to 9 stack members , support long distance stacking via 10G Ethernet fiber port, support stacking bandwidth up to 80G (Full Duplex)</p> <p>2.10. Should support ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)</p> <p>2.11. Should support IEEE 802.3az</p> <p>3. Manageability</p> <p>3.1. Should support SNMPv1/v2C/v3, CLI(Telnet/Console), RMON (1,2,3,9), SSH 、 Syslog, NTP/SNTP, FTP, TFTP, Web</p> <p>3.2. The switch can be managed by public cloud</p> <p>4. Cloud Management</p> <p>4.1. Should be no additional license</p> <p>4.2. Should support switch ports status monitoring, including RX/TX speed and packet each port</p> <p>4.3. Should support switch CPU, Memory, temperature, flash usage and PoE power usage monitoring</p> <p>4.4. Should support VLAN management for each port</p> <p>4.5. Should support syslog, SNMP, NTP, DNS, NFPP and IGMP Snooping configuration</p> <p>4.6. Should support auto-propose of device firmware version</p>

Special equipment	Minimum requirements
Cloud Management Service	<p>1. Overview</p> <ul style="list-style-type: none"> 1.1. APs, Switches and Gateways Support 1.2. Authentication Support (PSK, PPSK, 802.1x, RADIUS, Voucher, One-click, social login, open) 1.3. Management Platform (Web / Mobile APP) 1.4. Data Forwarding: Local Breakout <p>2. Management & Monitoring</p> <ul style="list-style-type: none"> 2.1. Unified Management for Provider's APs, Switches and Gateways 2.2. Dashboard with Google Maps integration 2.3. Multi-tenant architecture 2.4. Sub-account group management 2.5. Multi-level groups supported to manage devices 2.6. Network overall running status monitoring, including traffic trend, numbers of clients, Top APs, Clients and SSIDs 2.7. Alarms Email notification and different alarm level mapping to different contact group 2.8. Flexibility to segment APs within a network into different AP groups 2.9. Channel and power control per network and per AP 2.10. Automatic or selectable band balancing (between 2.4 and 5GHz radios on the same AP) 2.11. Ability to import floor plans to visualize physical location of Aps <p>3. Wireless Management</p> <ul style="list-style-type: none"> 3.1. Radio country code, channel and power setting 3.2. MAX clients number limitation for each radio 3.3. SSID and mapping VLAN management 3.4. Built-in and external portal management, including social login, One-click, Voucher login methods, Portal page customization and multi-language configuration 3.5. The multi-language should support at least 2 country languages, including but not limited to Chinese (Traditional) and English. 3.6. The build-in portal should support Advanced Design Customization, including but not limited to the Logo Position, Background Mask Color & Opacity, Button Position & Color, Link /Text Color, etc. 3.7. The build-in portal should support up to 4 multiple logins at same page, such as Social Login, Voucher, Account and 1-click, etc. 3.8. WEB and telnet security configuration 3.9. Support AP load balancing (band steering) 3.10. Support L2 and L3 seamless roaming without any on-premises WLAN controller 3.11. RRM auto RF planning <p>4. Switch Management</p> <ul style="list-style-type: none"> 4.1. Switch ports status monitoring, including RX/TX speed and packet each port 4.2. Switch CPU, Memory, temperature, flash usage and PoE power usage monitoring 4.3. VLAN management for each port 4.4. Syslog, SNMP, NTP, DNS, NFPP and IGMP Snooping configuration <p>5. Gateway Management</p> <ul style="list-style-type: none"> 5.1. Gateway online users, sessions and applications monitoring 5.2. Gateway CPU, Memory and flash usage monitoring 5.3. Top 10 traffic by applications and clients monitoring 5.4. Configuration backup and restore 5.5. Remote access local EWEB configuration supported 5.6. Gateway should be fully integrated with the cloud system and provide local login acceleration, such that the portal 1-click, voucher and account

Special equipment	Minimum requirements
	<p>authentication can be processed locally at gateway but central managed at Cloud side.</p> <p>6. Zero-touch Provisioning</p> <p>6.1. Add Device via QR-Code scanning via Mobile App</p> <p>6.2. Bulk device scanning</p> <p>6.3. Auto-propose of device firmware version</p> <p>7. Mobility Management (Mobile App)</p> <p>7.1. Logical Network Topology Management</p> <p>7.2. Scan to register APs to the Provider's Cloud</p> <p>7.3. Push notifications for alarms</p> <p>7.4. Monitor status of total network, AP and clients</p> <p>7.5. Create and configure new SSIDs</p> <p>7.6. RRM wireless network auto optimization</p> <p>7.7. Upgrade device to latest firmware</p> <p>7.8. Speed test and signal & security checking</p> <p>7.9. IOS and Android App</p> <p>7.10. Support Devices Reboot and Switches Port reboot features</p> <p>8. Wi-Fi Configuration</p> <p>8.1. Open, click-through, access code</p> <p>8.2. Social networking login (Facebook)</p> <p>8.3. Traditional PSK (WPA/WPA2)</p> <p>8.4. Private pre-shared key (PPSK)</p> <p>8.5. Time-limited and login times control for per client</p> <p>8.6. Traffic-limited control for per client</p> <p>8.7. Seamless online by MAC address</p> <p>8.8. Per WLAN aggregate bandwidth limit</p> <p>8.9. Per WLAN and per client bandwidth limit</p> <p>8.10. Bulk creation of guest credentials (access code)</p> <p>8.11. MAC caching to allow repeat customers quick access to guest Wi-Fi (seamless auth)</p> <p>8.12. Integration with third-party guest Wi-Fi marketing platforms including WiFiDog</p> <p>8.13. Multi-languages captive portal</p> <p>9. Security, Privacy & Protection</p> <p>9.1. Only AP and client management traffic are sent to the cloud</p> <p>9.2. Offers EU-located datacenters for European customers</p> <p>9.3. Role-based access control is provided for administrative privileges</p> <p>9.4. User is able to grant access to partners and tech support (remote assistance)</p> <p>9.5. Client isolation is supported for each SSID</p> <p>10. Reporting & Analytics</p> <p>10.1. Traffic per AP, per network group</p> <p>10.2. Top 10 Traffic by APs, network groups and SSIDs</p> <p>10.3. Mobile Phone brand distribution</p> <p>10.4. User experience trend data (tracking on 2.4 and 5G)</p> <p>10.5. Unique client reports</p> <p>10.6. Voucher created and activated summary report</p> <p>10.7. Report should support CSV or PDF format export by Last 24 Hours, 7 Days, 30 Days period</p> <p>11. Troubleshooting</p> <p>11.1. Remotely reboot devices, web-CLI advanced diagnostic</p> <p>11.2. Get notifications of network status via Email</p> <p>11.3. Event logs are sorted by network device</p> <p>11.4. Alarms are generated for device status</p> <p>11.5. View historical client data to troubleshoot issues that happened in the past</p>

Special equipment	Minimum requirements
	<p>12. Cloud Data Center</p> <p>12.1. Hosted in Singapore and Europe on world-class IAAS provider</p> <p>12.2. Stringent physical, data access, data disposal security measures</p> <p>12.3. High availability of cluster architecture on cloud hosting</p> <p>12.4. Auto choose the hosting region for your service (Singapore or EU)</p> <p>13. 3rd Party Integration</p> <p>13.1. Should support Open API for 3rd Party AAA, Hotel PMS, Retail POS system integration</p> <p>14. Subscription Model</p> <p>14.1. Should provide Lifetime FREE subscription service for above Cloud Management Service and Mobile App download, including all feature upgrade patches and bug fix support</p> <p>15. Support Model</p> <p>15.1. Support provides 7×24 Online Support and Email Technical Support</p>

承投「光纖到課室」網絡提升先導計劃工程(一式兩份)

學校檔號: XPYPSSC/2021010

截止書面報價/截標日期: 2021年4月23日(星期五)正午12時正

寄新界天水圍天秀路25號
香港普通話研習社科技創意小學校長收

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