PAKISTAN TELECOMMUNICATION COMPANY LIMITED
HEADQUARTERS, G-8/4, ISLAMABAD

DATE: 18-August-2020

REQUEST FOR INFORMATION (RFI)

FOR

REFURBISHED GPON ONTs

PAKISTAN TELECOMMUNICATION COMPANY LTD.
HEADQUARTERS, G-8/4, ISLAMABAD

REQUEST FOR INFORMATION (RFI)   Dated: 18th August, 2020

SUBJECT: REFURBISHED GPON ONTS

1. PTCL intends to invite vendors to share information & recommendations pertaining to RFI TOR in light of their strengths and capabilities in supplying, refabricating/ refurbished and testing of ONTs.

2. Soft copies of proposal/solution shall be submitted in the office of undersigned as per instructions provided in RFI document on or before **12:00 Hours** on **01st September, 2020.**

3. Due to prevailing lockdown situation in the country, it is not possible for bidders to submit the physical bids (hardcopies). You are required to submit your bid as per following instructions:

    Submit password protected proposal in excel/word or pdf format to GM Procurement (B.S) only through email i.e. Syed.Mohsin@ptcl.net.pk before the deadline.

    Note: You are required to inform if you are not participating in tender and No bid will be accepted after the bid submission deadline

4. PTCL reserves the right to reject bids/solution and to annul the RFI process at any time, without thereby incurring any liability to the affected bidder or any obligations to inform the affected bidder of the grounds for PTCL action.

5. Bidder must mention their Bidder Registration code on offer. In case Bidder is not registered, then registration must be done before the issuance of Letter of Award/Intent. Bidder Registration form can be downloaded from PTCL website: https://www.ptcl.com.pk/Info/Vendor-Registration-Form

6. All correspondence on the subject may be addressed to the undersigned and Bids shall be submitted on the address given below.

GM Procurement (Business Support)
Room # 18, 4th Floor, Old Building
PTCL Headquarters, G-8/4, Islamabad
Phone: 051-2283056 & 051-2283462
Email: syed.mohsin@ptcl.net.pk

EXPRESSION OF INTEREST

1. Introduction

PTCL is interested to get information from reputed vendors having expertise and background in supplying, refabricating/ refurbished and testing of ONTs. The requirements given in below paragraphs are generic and open for modification in the light of manufacturer inputs and to fulfill the triple play services requirement of PTCL.

PTCL intends to purchase low cost refabricated ONTs meeting all applicable standards issued by concerned International bodies. OREMs with their local partners will be preferred to show their joint interest to supply and modify the refabricated ONTs as per PTCL requirement. PTCL is already providing Broadband, IPTV and voice services to its valued customers by using ONTs and OLTs of M/s Huawei, ZTE, Nokia and Fiber Home. Potential vendors are invited to share the following information, but not limited to;

2. GPON ONTs related Information:

ONT (Optical Network Terminal) Basic requirements:

2.1. PTCL is currently using following ONTs in terms of make and model, interested vendors are encouraged to offer the same preferably with required interfaces as mentioned in below clause 2.2. Vendor can share information of similar different models as well by ensuring compatibility with respective vendor's OLTs.

Supplier's	Item Description		ONT Model No.
ZTE	Basic Model	Single Band ONT	ZXHN-F660 v7.1
		Dual Band ONT	ZXHN-F670L v1.1
	Standard Model	Single Band ONT	ZXHN-F660
		Dual Band ONT	ZXHN-F680
Huawei	Basic Model	Single Band ONT	HG8141A5
		Dual Band ONT	HG8145V5
	Standard Model	Single Band ONT	HG8245H5
		Dual Band ONT	HG8245W5
Fiberhome	Basic Model	Single Band ONT	HG6543C
	Standard Model	Single Band ONT	AN5506-04-FS
		Dual Band ONT	HG6245P
Nokia	Basic Model	Single Band ONT	G-120W-F
	Standard Model	Single Band ONT	G-240W-F

2.2. The vendor shall share the information of refabricated ONTs with complete technical details of each type separately in terms of interfaces, features, LED indication, and WiFi functionality as per below types requirements:

S#	ONT Type	Ethernet Ports			POTS	Unit Price (CPT-USD)/ DDP-PKR
		FE	GE	USB		
1	**Standard ONT** Single Band (Wi-Fi) (2.4 GHz)	1	0	0	1	
		2	2	0	2	
	Standard ONT Dual Band (Wi-Fi) (2.4 & 5 GHz)	2	2	0	2	
2	**Basic ONT** without Wi-Fi	1	0	0	1	
		2	1	0	2	
		2	2	0	2	

2.3. Vendor shall share following information as minimum

S#	Information Description	Vendor to state information
1	ONT Make and model	
2	Year of manufacturing	
3	Year of refabricating	
4	Working condition	
5	Physical appearance	
6	Associated accessories Power adapter, cords, Antenna etc. are included in packing list. Or not	
7	Refabricated history	
8	Compatible with OLT of	
9	Back end OREM	
10	Software upgradation possible or not	
11	Can work for triple play services - Broadband - IPTV - Voice	
12	Labeling for PTCL	
13	Network locking feature possible or not	
14	After sale maintenance support	
15	Testing mechanism	
16	Warranty	

3. Technical Specification of GPON ONTs

3.1. The ONTs shall be compatible with GPON OLTs of M/s Huawei, ZTE, Nokia and Fiber Home. Vendor shall state compatibility of each type separately.
3.2. Vendor shall submit IOTs compatibility test reports with different vendors.
3.3. The offered ONTs shall be fully complaints to relevant international standards. Vendor shall state the supporting standards in details.
3.4. The ONT shall support to use a clock extracted from the ODN interface in conformance with of ITU-T G.984.3.
3.5. The vendor shall quote the ONT with built in rechargeable battery as an optional.
3.6. Offered ONTs shall be of latest hardware and software version. Vendor shall state the complete manufacturing details.
3.7. Offered ONTs shall be fully compliant to TR-069 (Home Device Manager). In this connection, vendor shall be responsible to get the certification from Nokia Motive to avoid later on detail testing at the time of acceptance/testing by PTCL. References for ONT integration with Nokia Motive HDM over TR-069 shall also be shared

3.8. Offered ONT shall have Supports multiple data service profiles
  * Traffic management and Quality of Service (QoS):
  * 802.1Q VLANs
  * 802.1p service prioritization
  * Q-in-Q tagging
  * Multiple VLANs (supports E-LAN, E-LINE and TLS and Layer-2 CP)
  * Supports Active Ethernet (AE) deployment
  * Support 8.2.3ag Ethernet OAM.
  * Support Y.1731 Ethernet OAM.

3.9. Offered ONT shall support pass through of 1588V2 messages in downstream direction.

3.10. Offered ONT shall have phase synchronization via 1588V2 support of G.984.3 amendment.

3.11. The offered ONT shall support the following:
  * Rate limiting
  * MAC filtering
  * URL filtering
  * DiffServ
  * Pre-defined QoS on service type
  * IPTV, IGMPv2, IGMPv3
  * IGMP Snooping and Proxy
  * IGMP Fast Leaves
  * PABX Support
  * Network Printer Support
  * PRI/BRI Support
  * Gateway Management:
      o TR-069
      o TR-098
      o TR-142
      o TR-143
      o TR-181
      o TR- 256

3.12. The offered ONT shall comply with OMCI specification as per ITU-T G.988,   Amd1   to G.988 and Amd2 to G.988.

3.13. The offered ONT shall support to get software version upgradation remotely over ONT Management Control Interface (OMCI).

3.14. The offered ONT shall support alarm, AVC report and performance monitoring over OMCI with OLT

3.15. The offered ONTs shall be interoperable with other vendors NMS.

3.16. Offered ONT shall have following access support
  * Local Home Gateway GUI, access
  * Remote WAN side GUI access

3.17. ONT shall have the following functional features and specifications;

  * Chipset: ONT shall have the top rated chipset, well-recognized and international reference.
  * Processor: Dual Core with at least 600MHz clock speed.
  * RAM: $\geq$ 128 MB (higher will be preferred).
  * Flash: $\geq$ 128 MB (higher will be preferred).
  * WiFi: Single band (2.4GHz) ONT shall support 2x2 MIMO 802.11 b/g/n & dual band 2.4 GHz & 5.0 GHz with 2x2 or 3x3 & 4x4 MIMO 802.11 a/b/g/n/ac/ax
  * Antenna Gain: 5dBi

3.18. WiFi through put: Vendor shall state the WiFi throughput value of offered ONT; however, for single band it should not be less than 300 Mbps.

3.19. The ONT shall be Configurable IP address schemes, subnets, static-IP addresses.

3.20. The ONT shall support Bridge port assignment and data traffic mappings

3.21. The ONT shall support Port forwarding

3.22. The ONT shall have Firewall and security

3.23. The ONT shall support Application and website filtering

3.24. The ONT shall have Selectable forwarding and blocking policies

3.25. The ONT shall support the Status Reporting mode in conformance with ITU-T G.984.3.

3.26. The ONT shall be able to use the activation Discovered SN method in conformance with ITU-T G.984.3.

3.27. The ONT shall be able to use the activation Configured SN method in conformance with ITU-T G.984.3.

3.28. The vendor solution shall support all possible authentication methods (LOID, LOID plus Password, Serial Number etc.).

3.29. The ONT shall support the encryption system (128 bits AES) and the Key Exchange mechanism in conformance with ITU-T G.984.3.

3.30. The ONT shall support an "embedded OAM channel", a "PLOAM channel" and an "OMCI channel" in conformance with ITU-T G.984.4.

3.31. Upstream Nominal line rate shall be 1244 Mbps line rate.

3.32. Downstream Nominal line rate shall be 2488 Mbps line rate.

3.33. The ONT shall support session initiation protocol (SIP) for VoIP.

3.34. Latest SIP features as per latest RFCs shall be supported on ONTs, however the control shall only be available on SS. Configurations of SIP features that are not controllable at SS level shall only be allowed through NMS or admin user on ONTs only.

3.35. ONTs shall not act as SIP server and shall only be configured as SIP clients.

3.36. All supplementary voice services previously provisioned through MSAG/MSAN shall be supported on ONTs as well.

3.37. The offered ONT shall support both static and dynamic IP assignments for SIP.

3.38. The offered ONT shall be capable to switchover automatically between Softswitches dual homing for successful SIP registration in case of active Softswitch failure or active Softswitch media inaccessibility and vice versa.

3.39. ONT shall only register itself with the currently active soft switch. ONT shall not be registered with Standby SS.

3.40. To make the network more secure, there shall be support on ONTs to connect with SBCs before connecting directly with SS.

3.41. The classified flows with the same QoS shall be forwarded to the same GEM port.

3.42. The ONT shall forward the downstream flows coming from the GEM ports to the adequate destination UNIs according to the various classifications that have been done in the upstream direction.

3.43. For those frames over the multicast GEM-Port, the multicast MAC filtering shall be done on the basis of ONT.

3.44. IGMP v2/v3 snooping shall be supported in the ONT for multicast forwarding
- The ONT shall be able to classify the upstream flows based on one or a combination of all these parameters at least as following.VLAN-IDs.
- 802.1p p-bit.
- VLAN-ID and 802.1p p-bit.

3.45. The ONT shall support at least one or all of these audio CODEC algorithms as following and shall have no issue of interoperability with PTCL existing soft switch and other related equipment.
- ITU-T G.711 A/µ law.
- ITU-T G.723.1 (5.3k).
- ITU-T G.723.1 (6.3k).
- ITU-T G.729.

3.46. ONT shall have following local report status functional;
1) User ID
2) PON port link status
3) Power supply status
4) Vendor code
5) Model number
6) ONT shall have following buttons;
   a) Power ON/Off
   b) Reset button (hole type)
   c) WPS button
   d) WiFi ON/Off

3.47. The offered ONT shall have following LED status indication but not limited to;
   i. WPS indication
   ii. USB indication
   iii. Every Interface shall have the separate indication.
   iv. Power on/off status
   v. LOS indication
   vi. PON indication: Indicates PON fiber link is normal and OAM channel is operational
   vii. Connectivity status: Internet connectivity
   viii. Gigabit Ethernet port connectivity indication.
   ix. POTS port connectivity indication
   x. WLAN indication

3.48. Following LOGs of 1 month shall also be available on ONTs:
   I. Command LOGs.
   II. Configurational LOGs.
   III. System LOGs

3.49. Standard based 128 bit AES for ONT shall be supported.

3.50. Voice/POTS based on SIP and/or H.248 shall be supported.

3.51. ONT shall support "CPE WAN Management Protocol" framework & it's Data Models based on Broadband Forum TR-069, TR-181, TR-098, TR-106, TR-111, etc.

3.52. IP traffic classifications based on a set of rules such as source or destination IP address, TCP ports, etc. The IP packets will be classified accordingly and tagged with the appropriate TOS bit.

3.53. ONT shall support Ethernet Jumbo Frame at the access and uplink interfaces.

3.54. Offered ONT shall have Symmetrical Gigabit Ethernet (GE) interfaces (1 Gbps) bandwidth for IPTV and data services.

3.55. Offered ONT shall have all optical and Electrical i.e. GE, FE interfaces. Vendor shall state the complete details.

3.56. Auto negotiation or manual configuration of 10Mbps, 100Mbps, 1Gbps and half-duplex or full duplex on ONT's access port shall be supported.

3.57. MAC address learning shall be described by the vendor.

3.58. The following parameters of offered ONT shall be described by the vendor;
   a. Broadcast rate limiting
   b. UTP port auto detection.
   c. Maximum forwarding MAC address supported per ONT
   d. Maximum VLAN supported per ONT
   e. The range of VLAN ID supported per ONT
   f. Maximum number of services supported per ONT
   g. Maximum GEM port supported per ONT

    h.   Maximum T-Cont supported per ONT

    i.   Maximum multicast clients supported per ONT

    j.   Maximum multicast stream per client supported per ONT

    k.   Maximum access list supported per ONT

3.59.   The indoor ONT shall work in temperature - 5°C to 55 °C and Humidity 95%.

3.60. The outdoor ONT shall work in temperature - 15°C to 65 °C and Humidity 95%.

3.61. The vendor shall describe the details of outdoor ONT as well as indoor ONT.

3.62. The vendor shall describe the details of residential ONT and business premises ONT.

3.63. Wireless Functionality

    The Offered ONT shall have WiFi functionality with below minimum requirements but not limited to; vendor may state any additional feature of offered ONT.

3.89.1. Dual Band 2.4GHz and 5GHz, simultaneous.

3.89.2. 5GHz 802.11ac certified, 802.11a/g/n compatible

3.89.3. 2.4GHz 802.11n certified, 802.11b/g compatible

3.89.4. Airtime Fairness (DFS feature) on 2.4 GHz and 5 GHz radios

3.89.5. QoS support allowing prioritization of video service set identification (SSID) over low priority best effort H S I identifier (SSID)

3.89.6. Support set of tools for provisioning, maintaining and troubleshoot the home WiFi network

3.89.7. ONT with Single Band Wi-Fi should also be mentioned if required in BOQ.

3.89.8. ONT shall support minimum WPA Encryption (TKIP+AES)

3.89.9. ONT shall support network Authentication (WPA2-PSK) and shall be compatible to all backward & upward

3.89.10. The vendor shall offer ONTs WiFi AP that should not limited to support/comply the following:

- IEEE 802.11ac Wave 2 support.
- Backward compatibility with IEEE 802.11ac Wave 1,n, g, a, b.
- Multi-user MIMO (MU-MIMO)
- Auto-channel adaptation
- Single-band radio
- Dual-band radio
- Beam forming
- Mesh connectivity
- Ability to transmit multiple SSID
- Power: up to 20 dBm (100 mW EIRP)

4. PTCL Reserved Rights:

4.1. PTCL reserves the rights to make any changes to the specifications at any time without any prior notice.

4.2. PTCL does not guarantee that the requirements, standards, regulations, and/or conditions stated in this document of specifications are not covered / protected by copyright or patent of a third party.

4.3. PTCL has the rights to accept or reject the offered proposals without any notice or explanation. It is pertinent to mention that this is RFI only, PTCL will not sign a Contract or place purchase order to any of the bidders /vendors.

5. How to Respond:

5.1. Vendor shall submit clause-by-clause compliance statement of this document.

5.2. This is the RFI stage, vendor shall check carefully his capability, OREM support for any software modification prior to share the information. Soft copy of password protected proposal in excel/word or pdf format will be submitted to GM Procurement (Business Support) only through email i.e. Syed.Mohsin@ptcl.net.pk maximum by or **before 1200 hours on September 01, 2020**.