

TERMS OF REFERENCE

for the provision of Internet and Inter-branching connectivity Services

I. Rationale

UN Agencies in Lebanon (UN LEB) have Offices located in various locations around Lebanon. Some agencies have offices connected through an inter-office WAN Data Connectivity System. The data connections are also used for VoIP and Video communications.

The UN LEB offices are connected with two (2) Internet connections with same speed. One acting as the primary and the other as secondary. The secondary Internet connection serves as a redundant connection to the primary Internet connection (that flows to the Internet cloud with the same IP range/subnet¹), while both links are simultaneously up. It maintains the availability of Internet when the primary connection incurs downtime.

Considering the above, the UN LEB deemed it necessary to affect the enhancement of its existing Internet connection through the engagement of Data Service Providers (DSPs) or Internet Service Providers (ISPs) that shall provide UN LEB with efficient, reliable and cost-effective Internet and Inter-branching links.

UN LEB provides technical support to several government entities including connectivity solutions that either provides inter-branching services and/or Internet services to remote sites.

II. Objectives:

UN LEB aims to enhance the existing Internet and Inter-branching connectivity of its current and future offices in Lebanon. Specifically, the objective of the LTA is to identify the Internet Service Provider who will be able to render the 24/7 uninterrupted Internet and inter-branching services to UN LEB, whose offices are located in various locations across Lebanon. The service standards shall meet the specifications mentioned in this ToR.

The vendor should provide a bundle including a primary symmetric link and a secondary backup link. Additionally, the vendor should own an existing data network and fiber connection, to provide a symmetric and highly reliable inter-branching link between UN LEB offices.

The vendor should provide mobile connectivity services to connect mobile devices and/or remote sites back to UN LEB main offices through internet and/or inter-branching services.

The vendor should also be able to extend all of the above-mentioned services to the government or third-party entities that UN support with connectivity services.

III. Scope of Work

The scope of work includes providing continuous access to Internet resources through

¹ If the primary and secondary services are provided by the same internet service provider. The UN agency can opt for different primary and secondary service providers.

a primary link (Microwave, Fiber or EFM) and/or a secondary link of same speed or lower². In addition, it includes the implementation of an inter-branching guaranteed symmetric connection between UN offices in Lebanon³.

The scope of the work includes supply, installation, commissioning and testing of related hardware and software for setting up Internet and inter-branching connection.

Installation of equipment:

Installation to be free of charge.

Microwave antennas to be provided at no cost (as they will remain property of the ISP).

The main deliverables are:

- a. **Primary and Secondary⁴ Internet links** (symmetric net speed excluding headers) as below:

Item #	Primary link
Item # 01	2 Mbps
Item # 02	4 Mbps
Item # 03	5 Mbps
Item # 04	8 Mbps
Item # 05	10 Mbps
Item # 06	12 Mbps
Item # 07	15 Mbps
Item # 08	16 Mbps
Item # 09	20 Mbps
Item # 10	24 Mbps
Item # 11	30 Mbps
Item # 12	40 Mbps
Item # 13	50 Mbps
Item # 14	60 Mbps
Item # 15	80 Mbps
Item # 16	90 Mbps
Item # 17	100 Mbps
Item # 18	200 Mbps
Item # 19	300 Mbps

- b. **Secondary symmetric xDSL Internet Link** as below:

Item #	Secondary link (xDSL)
Item # 20	2 Mbps
Item # 21	4 Mbps
Item # 22	6 Mbps
Item # 23	10 Mbps

² As per the requirements and standards of each organization.

³ UN offices can refer to different offices of the same organization or different organizations.

⁴ Secondary links can be any type of link that can be provided at the specific location including xDSL links.

- c. **Inter-branching** symmetric mesh and/or point-to-point link between UN offices or any other entities offices that are supported by UN with connectivity services as below:

Item #	Inter-branching link
Item # 24	2 Mbps
Item # 25	4 Mbps
Item # 26	5 Mbps
Item # 27	6 Mbps
Item # 28	10 Mbps
Item # 29	12 Mbps
Item # 30	15 Mbps
Item # 31	20 Mbps
Item # 32	24 Mbps
Item # 33	30 Mbps
Item # 34	40 Mbps
Item # 35	50 Mbps
Item # 36	60 Mbps
Item # 37	80 Mbps
Item # 38	90 Mbps
Item # 39	100 Mbps

- d. **Inter-branching** symmetric direct point-to-point link between UN offices or any other entities offices that are supported by UN with connectivity services as below:

Item #	Direct Inter-branching link
Item # 40	100 Mbps
Item # 41	150 Mbps
Item # 42	350 Mbps
Item # 43	500 Mbps
Item # 44	800 Mbps
Item # 45	1Gbps

- e. **Mobile Connectivity Services** with internet connectivity:

Item #	Mobile Connectivity Services (with Internet Connectivity)
Item # 46a, 46b, 46c	10 GB
Item # 47a, 47b, 47c	20 GB
Item # 48a, 48b, 48c	40 GB
Item # 49a, 49b, 49c	60 GB
Item # 50a, 50b, 50c	100 GB
Item # 51a, 51b, 51c	200 GB
Item # 52a, 52b, 52c	300 GB

- f. **Mobile Connectivity Services** point-to-point link back to UN offices and the main site of any other entities that are supported by UNHCR with connectivity services as below:

Item #	Mobile Services (without Internet Connectivity)
Item # 53a, 53b, 53c	10 GB
Item # 54a, 54b, 54c	20 GB
Item # 55a, 55b, 55c	40 GB
Item # 56a, 56b, 56c	60 GB
Item # 57a, 57b, 57c	100 GB
Item # 58a, 58b, 58c	200 GB
Item # 59a, 59b, 59c	300 GB

g. **Mobile Connectivity Devices** as below:

Item #	Mobile Connectivity Devices
Item # 60	USB LTE capable modem
Item # 61	Mobile LTE capable Wi-Fi hotspot (with minimum of 8 devices concurrent connections to the hotspot)
Item # 62	LTE capable SMB Wi-Fi Router (capable of handling a minimum of 10 devices concurrent connections to the router)

For mobile connectivity services listed under points (e) and (f) above, the data bundles should be sharable across multiple SIM cards that are connected simultaneously to the network. The provider should be able to provide 1 month -sub items (a)-, 3 months -sub items (b)- and 6 months -sub items (c)- validity for all of the data bundles listed under points (e) and (f) above. The service provider should provide the number of included SIM cards for each bundle -that would be free of charge -if any-. The provider should be able to provide additional SIM cards to be used under a certain bundle at a one-time SIM card issuance fee. The provider should allow the UN agencies to change the selected data bundle(s) and the assignment of the issued SIM cards to different active bundles at least once every month.

On the backbone level, the Vendor should provide documented information on the existence of an extraterrestrial back up link in case of a terrestrial outage.

The scope of work also includes configuration of all related hardware and software including any training to UN LEB ICT staff and/or ICT staff designated by any other entities that are supported by UN with connectivity services, if required. The service provider shall accomplish any jobs and services that are not mentioned above but are required for completion of project, without any extra charges for completeness of the work under contract.

IV. Technical Requirements

Bidders must submit, for both Internet (primary and secondary) and Inter-branching connectivity, detailed work plan specifying installation design, detailed activities, connectivity diagram from UN premises up to the last mile or from any other entities that are supported by UN with connectivity services up to the last mile and timelines in order to determine compatibility with the existing UN infrastructure and/or the existing infrastructure of any other entities that are supported by UN with connectivity services. Additionally, the offer should provide a diagram showing the whole path between the two sites.

The technical requirements are as follows:

- Setup dedicated Internet and Inter-branching connections as per the requirement

- of the UN agency at Main Office and Branch Offices of UN agencies and any other entities that are supported by UN with connectivity services.
- Supply and install dedicated full symmetric Internet and inter-branching connections with the selected speed at each office/location, depending on the convenient infrastructure (Fiber Optic, Microwave, DSL) with at least 99.99% uptime service availability.
 - Provide Internet connection at a traffic-independent flat fee, unlimited usage time (No limitation of usage time), without any further restrictions on use (i.e. proxy, firewall, filtering server, throttling and VOIP)
 - Provide and guarantee a secondary link with same Internet speed as the main link or as per the requirements of each agency.
 - Provide a backup Satellite link (optional as per Agency requirement).
 - In case of emergency, provide higher bandwidth up to 50% for a limited period, for every office/location, within 30 minutes, depending on the existing connectivity (Fiber, Copper or Microwave) at site with no cost.
 - Network Operating Centre (NOC) shall be available on a 24/7 basis, with at least one Telecom engineer present.
 - Provide, install and configure customer premises equipment (CPE) at both ends of the Internet connections for the agreed Committed Information Rate (CIR).
 - Configure routers with necessary configuration of each UN agency.
 - Configure backup router or a link load balancing feature/equipment as per the requirement of each UN agency.
 - Assign at least 6 usable Public IP Addresses for each site.
 - Provide Domain Name Server (DNS) reverse lookup for entries with the assigned classless network.
 - Provide reliable Forwarding and Secondary DNS.
 - Provide single point of contact for customer support.
 - Provide a dedicated Technical focal point for UN LEB.
 - Provide proactive notice of scheduled downtimes or service interruption.
 - Render customer service support.
 - Provide a detailed usage report for each site (as per the requirements of each agency).
 - Provide "Performance Credit" or rebate in the Service Level Agreement (SLA).

v. *Duties and Responsibilities of the Data and Internet Service Provider*

a. Pre-Installation

Provide detailed workplan specifying installation design, detailed activities and network diagram, showing connectivity from end-user's datacenter up to the last mile and timelines.

1. Additional requirement

The bidder shall provide UN LEB or any other entities that are supported by UN with connectivity services the appropriate software to monitor, in real time, the usage of the bandwidth, the quality of the service and state of all Internet and Inter-branching Links.

2. Installation

- Setup Internet Connection with the agreed Committed Information Rate (CIR) connection bandwidth for both upstream and downstream network traffic flows at UN offices and any other entities that are supported by UN with connectivity

services;

- Provide Internet connectivity directly to end user's datacenter or server room, including materials needed for the purpose. This includes provision for the installation of cables/insulation using industry standard and materials.
- Provide and install customer-premises equipment (CPE) at UN offices and any other entities that are supported by UN with connectivity services.
- Complete the delivery, installation and configuration within thirty (30) calendar days from the receipt of the Purchase Order (PO).

3. Configuration

- Configure CPE for dedicated direct Internet speed connection and for inter-branching at UN offices and any other entities that are supported by UN with connectivity services.
- Configure the link load balancing or a backup CPE, if any;
- Assign at least 6 usable public IP addresses; number of IPs to be more for higher bandwidth. Assign one classless (/28) network for each site if requested and accepted by the UN agency.
- Provide DNS reverse lookup for entries with the assigned classless network;
- Provide reliable Forwarding and Secondary DNS.
- Provide traffic shaping and policing as per the request and requirements of the UN agency.

4. Testing Period

- a. The selected ISP shall notify the UN LEB in writing seven (7) days prior to the required inspection/testing of the internet service connection.
- b. The acceptance test procedure shall be in accordance with the following:
 - The acceptance testing will be undertaken for a period of seven (7) days.
 - Direct Internet link will have no service interruption during the agreed test period.
 - The guaranteed Internet bandwidth with the agreed Committed Information Rate (CIR) is attained 24/7.
 - Average latency should not exceed more than 20 milliseconds average round trip from UN offices to ISP port, and not more than 120 milliseconds average round trip from ISP port to International port.
 - MRTG or an agreed equivalent solution should be in place.
 - Assignment of at least 6 usable Public IP Addresses.
 - The provider must conduct a Bit Error Rate (BER) test during the testing period to eliminate cyclic redundancy check (CRC) errors.

If any of the foregoing conditions are not met, the count of the testing period shall be restarted until all of these conditions have been duly satisfied continuously for 7 working days. The start of the Contractor's billing shall start once the testing period is successfully completed.

5. Implementation

The vendor shall:

- maintain all equipment in proper working order.

- provide an escalation list and procedures in reporting fault and outages.
- immediately advise UN LEB about any downtime occurrence, in that case the Internet is rerouted automatically to a backup link.
- have standby equipment to replace immediately the existing equipment once found defective.

Rebates

The vendor must commit to an industry-standard Service Level Agreement (SLA) which shall carry a corresponding "Performance Credit" or rebate in favor of UN LEB, should any of the committed parameters mentioned in the Service Level Agreement (SLA) is not met.

An SLA document shall be an attachment to the contract between UN LEB and the service provider and constitute an integral part of the contract.

The SLA should include the following parameters as minimum:

- Render 24 hours x 7 days customer service support
- Support response time:
 - a. 30 minutes for emergency tickets for the following categories:
 - Link connection is down
 - Packet loss, variation in latency
 - Routing issue
 - b. Two (2) hours response time for technical problem that requires on-site services. For problem reported after 18:00 PM, services shall be rendered 8:00 in the morning of the following business day.
- Rebate Schedule for Downtime Connection Interruption/Outage

5. Maintenance

The vendor shall:

Provide a single point of contact for customer support in both areas of network connectivity and Internet access and assign a dedicated technical focal point for communication with UN;

- **Shall** respond to request for maintenance at no cost to UN LEB;
- Send a qualified technical representative within 2 hours for Beirut area and up to 6 hours for remote sites to resolve any problem at no additional cost if the problem cannot be resolved through telephone support.
- Provide necessary support and collaboration with UN to optimize the utilization of its internet bandwidth, at the request of the UN.
- Provide software/tool to UN for monitoring the data transfer rate/usage at any moment.
- Submit monthly reports to attest compliance to the SLA.
- Provide escalation matrix to UN.
- Inform UN in writing 10 days prior to any scheduled maintenance or 24 hours or less prior to any emergency unscheduled maintenance -immediately as it occurs-
- Provide not less than 7 days proactive notice of scheduled downtimes, service interruption, upgrades or preventive maintenance, if any; subject to the approval of UN LEB agency(ies) when these actions would only affect the corresponding agency(ies);

6. Security

- a. Different services to be provided by the vendor as per the request and requirements of each UN agency:
 - Vulnerability and Cyber thread monitoring
 - Alert and event monitoring of the network
 - Security attack correlation
 - Thread detection and mitigation
 - Provide security warnings
 - DDOS protection (Always-on traffic protection and Hybrid protection solution with Arbor)
- b. Both DDOS Solutions should be able to mitigate the below types of attacks: (from layer1 to layer7):
- c. Block very large attacks 500Gbps+ (any type of reflection attack like: DNS Amplification, NTP Amplification, Quake Amplification, CharGen, etc.)
- d. Block any type of UDP attack that is not directed through specific open ports (TCP are all open)
- e. TCP should be protected with no syn-proxy with possibility of layer7 (HTTP/HTTPS) protection over ports: 80, 443, 2078, 2083, 2087, 2095, 2096
- f. Layer 7 for HTTP/HTTPS
- g. Several applications for UDP. Any port or application can be added when needed.
- h. IP non-existing protocol attack such as Flood with IP packets with reserved values in protocol field;
- i. Attack with fragments such as sending mangled IP fragments with overlapping, over-sized payloads to the target machine;
- j. ICMP attacks such as: ICMP Flood, Smack, Smurf and any other potential attack.
- k. IGMP attacks such as: IGMP flood and any other potential attack.
- l. TCP attacks such as: SYN Flood, SYN-ACK Flood, ACK Flood, FIN Flood, RST Flood, TCP ECE Flood, TCP NULL Flood, TCP Erroneous Flags Flood, TCP Xmas, Fake Session, SRC IP Same as DST IP and any other potential attack.
- m. UDP attacks such as: General Random UDP Floods, Fraggle, DNS query, DNS Amplification (+DNSSEC), NTP Amplification, SNMPv2, NetBIOS, SDP, CharGEN, QOTD, BitTorrent, Kad, Quake Network Protocol, Steam Protocol and any other potential attack.
- n. HTTP attacks such as: Slowloris (Apache / IIS Attack), R-U-Dead-Yet (RUDY), HTTP Object Request Flood; and any other potential attack.
- o. Any other category attack such as Misused Application Attack, Slow Read attack, or newly discovered potential attacks.
- p. Anti-Spams solutions to protect the mails servers, DDOS security protection, additional layer of protection through advanced monitoring techniques allowing agencies to have a faster response time.
- q. Distributed Denial of Service solution should be available when needed to provide a faster mitigation (orders of 1 minute), including DNS protection, or any other applicable solution.
- r. Proactive monitoring: The UN Agency will be informed about the occurrence of the attacks and the details. (Even after working hours)
- s. ISP should be engaged with a collaborative partner, BT to enhance the security

solution in coordination with Arbor and get the recent latest updates from both security operation centers: BT and Arbor.

VI. *Duties and Responsibilities of the UN LEB*

- Grant the Vendor's authorized representative access to its premises, equipment and facilities located therein to perform its obligations, provided that such representative shall be accompanied by the duly assigned UN LEB personnel;
- Grant the Vendor's authorized representative access to the premises, equipment and facilities located therein to perform its obligations, provided that such representative shall be accompanied by the duly assigned personnel by the entities supported by UN with connectivity services;
- Responsible for the safe custody and use of the equipment installed by the ISP provider;
- Monitor the provided services and verify if the parameters under the Service Level Agreement are met and performed by the ISP provider.