بسم الله الرحمن الرحيم

Ministry of Homeland Security and Technology
Republic of Maldives

DIGITAL MALDIVES FOR ADAPTATION, DECENTRALIZATION AND DIVERSIFICATION (D'MADD) PROJECT
P177040

TERMS OF REFERENCE

for

Invitation to Submit a Proposal to Run a POC for SD-WAN Implementation – Expansion of the Maldives National Computer Network

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1. INTRODUCTION

The Ministry of Homeland Security and Technology (MOHST) is pleased to invite your esteemed organisation to submit a proposal to participate in a Proof of Concept (POC) initiative to implement a Software-Defined Wide Area Network (SD-WAN) solution at the National Centre for Information Technology (NCIT). This is part of the ongoing consultancy work, conducting a comprehensive needs assessment and developing a technical requirements specification for implementing an SD-WAN network to expand the Maldives National Computer Network (NCN).

This initiative is part of our strategic objective to expand and enhance the Maldives NCN to deliver secure, reliable, and scalable connectivity across government institutions and remote islands supported by the Digital Maldives for Adaptation, Decentralization and Diversification (D'MADD) Project.

D'MADD) Project (P177040) aims to support the Maldives in its digital transformation. The D'MADD project is funded by a World Bank grant and implemented by the MOHST. The key stakeholders include the Ministry of Tourism and Environment (MOTE), NCIT, the Communications Authority of Maldives (CAM) and the Department of National Registration (DNR). The Project aims to enhance the environment, enabling the Maldives' digital economy, improve in-person and remote service delivery identification, and leverage data and analytics for green, resilient, and inclusive development. It is designed around three components, and the proposed activities are conceived following the country's priorities and funding needs in the medium term. The components are as follows:

Component 1: Enabling environment for improved digital connectivity and competitiveness.

- 1.1. Improving regulatory frameworks, oversight, and enforcement for a competitive broadband market
- 1.2. Empowering public institutions for digital transformation in Government

Component 2: Digital identification for improved online and in-person service delivery.

- 2.1. Legal and institutional enablers and safeguards for secure data and identity management
- 2.2. Modernizing of the foundational ID system and credential
- 2.3. Strengthening the digital authentication ecosystem

Component 3: Digital technologies and data platform for climate resilience

- 3.1. Establishing a climate data platform
- 3.2. Leveraging digital technologies and tools for climate adaptation

2. BACKGROUND

The NCIT is critical to the Maldives' technological advancement and digital infrastructure. Assigned with the mandate to oversee the development and essential maintenance of government IT systems, NCIT serves as the backbone of the government of the Maldives' digital ecosystem.

NCIT, in partnership with the Local Government Authority (LGA), expands the National Computer Network (NCN) to remote islands. The local Internet Service Providers (ISPs) infrastructure is currently leased for this expansion. Additionally, local councils directly bear the cost of separate internet connections. These requirements and obligations create a recurring financial strain on managing the critical communication services within the government, particularly for local councils and other national organisations with remote branches that aim to provide decentralized services.

3. OBJECTIVE

The objective of this assignment is to engage an experienced and qualified firm (The Firm) to run a POC for SD-WAN Implementation – Expansion of the Maldives National Computer Network, which should cover two remote islands in addition to NCIT, as per the technical specification provided in this TOR. This Proof of Concept is to be carried out on a non-commercial, non-binding basis, with all associated costs borne by the Firm. However, since the hub requires internet connections for the overlay of SD-WAN network, NCIT will provide the connectivity for the devices at both ends. The POC will be used solely for technical and functional evaluation purposes and will not imply any obligation for future procurement. The short-listed firms will be allowed to run the POC. After the POC evaluation, a Tender will be issued for the design and implementation of a SD-WAN solution across 200 locations in the Maldives. Bidders should propose only the selected OEMs solution for the Tender.

A tender for commercial procurement, which will follow the POC, will be open to both local and international bidders. The tender will include the names of the qualified OEMs from the POC, and bidders are instructed to submit technology solutions and commercial proposals for those specific OEMs only. Bidders can be direct OEMs or any authorized partners of the OEMs. An OEM authorization letter should be provided for third-party bidders.

4. TECHNICAL SPECIFICATION

General Requirements:

- Proposed solution should be in the Leaders/Challengers Quadrant in Gartner's Magic Quadrant for WAN Edge Infrastructure for a minimum of the last three years
- The OEM must have a minimum of five successful SD-WAN deployments of a similar nature globally. The supplier must submit the project purchase order (PO) or project completion proof. The submission should include the project name, scope, summary, value, completion year, and any other supporting documents
- OEM should declare in writing that the proposed devices are not declared 'End of Support' for the next 5 years from the proposal submission date
- All the solution components should be proposed as an on-prem solution. Cloud solutions will not be accepted
- OEM should state the support process and the escalation matrix
- The OEM should confirm that all the clauses and conditions in the RFP are met at the time of proposal submission.

Technical Requirements:

- All the components of the proposed SD-WAN solution including the controller should be deployed onsite in Maldives
- In the initial stage, SD-WAN Hub devices will be installed at the Primary data center. But in the future, there will be another Hub at a Secondary data center. Therefore, the proposed solution should support this expansion and ensure high availability at both primary and secondary data centers
- The proposed solution should be a centralized, visualized and unified/distributed controller platform
- Proposed SD-WAN controllers should support distributed deployment to ensure disaster recovery
- The proposed SD-WAN solution must provide a highly reliable and robust network architecture
- The proposed controller should be scalable to up to 2500 CPE devices but not limited to
- The proposed controller should support multi-tenancy
- The proposed solution should support Zero-Touch Provisioning, with minimal effort required to deploy the solution. The supplier should explain the ZTP method in the technical proposal

- The proposed solution should support the physical and logical topologies of the SD-WAN network and real-time WAN connection performance, such as latency, jitter, packet loss, etc.
- The proposed solution should support real-time device interface traffic, link traffic and link quality monitoring. Also, it should support Real-time monitoring at the 10-second level and should support protocols such as SNMP
- The proposed solution should support role-based and domain-based site management
- The proposed solution should support predicting the future WAN side traffic and execute predictive O&M based on the live network traffic, algorithms, etc.
- The proposed solution should have device-level separation of the control and forwarding nodes
- The proposed solution should support flexible networking modes such as Hub-Spoke, Full mesh, etc
- Proposed solution should support local Internet breakout at branch sites
- The proposed solution should support URL filtering
- Proposed solution should support IPS to prevent the sites from malicious sites
- The proposed solution should support static routes, OSPF, and BGP routing protocols
- The proposed solution should support First Hop Redundancy Protocols (FHRP)
- Proposed solution should support Bidirectional Forwarding Detection (BFD)
- The proposed solution should support link-state tracking
- CPE devices proposed for this solution should support interface working mode switching between Layer 2 and Layer 3
- The proposed solution should support services to access different hubs through route control
- The proposed solution should support deployment modes such as USB-based, e-mail-based, DHCP-based, etc
- The proposed solution should support a REST API for third-party integrations
- The proposed solution should identify applications based on a signature database and first-packet inspection. It should also support the identification of customized applications. The Supplier should elaborate on the process of identifying customized applications
- The proposed solution should support traffic steering based on the defined link SLA for the application, application priority and usage
- The proposed SD-WAN solution must provide comprehensive QoS and HQoS capabilities to ensure optimal application performance, efficient bandwidth utilization, and intelligent traffic prioritization across the network

- The proposed solution should support data compression to optimize the bandwidth usage

Specifications for the Spoke Device

- The proposed device should be an enterprise-grade device
- SD-WAN throughput (IMIX) of the device should be a minimum of 80 Mbps
- Device should have a minimum of 8×1 Gbps copper ports and 2×1 Gbps fibre ports. Ports should support interchangeability between LAN and WAN
- The device should have a built-in power supply with a UK plug type. Input voltage should be 100 V to 240 V
- Operational temperature of the device should be 0°C to 45°C
- Device should support IPv4/IPv6
- Device should support 5G/4G LTE Module
- The device should support both SM and MM transceivers

Specifications for the Hub Device

- The proposed device should be an enterprise-grade device
- SD-WAN throughput (IMIX)of the device should be a minimum of 10 Gbps
- The device should support high availability
- The device should have a minimum of 4×1 Gbps copper ports and 2×1/10 Gbps fibre ports, which can be switched between LAN and WAN.
- Device should support IPv4/IPv6
- The device should support expanding the number of LAN/WAN ports with expansion cards. The OEM should clarify the maximum port count that can be expanded
- Device should support and have an AC dual power supply
- Power Cable type should be C13-14 Connector
- Power supplies and expansion card modules should support hot swapping
- The device should support both SM and MM transceivers
- Operational temperature of the device should be 0°C to 45°C

(Please refer to Annexure A for Detailed compliance, Evaluation Criteria and Marking scheme)

5. DELIVERABLES AND TIMELINE

Based on the above-described technical specification of work for this assignment, in close coordination with D'MADD project's Project Management Unit (the PMU), the consultant & NCIT, the firm shall be responsible for delivering the below:

Deliverable	Delivery
POC Equipment delivery to Male' Maldives once OEM receives the technical shortlist notification from the D'MADD project	30 Calendar Days
POC implementation in Head Office and Two Branch Locations	10 calendar days
POC Test Cases verification and Evaluation Submission of the detailed documentation of the POC (The details of the Test Cases & Scenarios for SD WAN POC Evaluation Document will be shared with short-listed/ qualified firms)	5 Calendar Days

6. INSTRUCTIONS FOR SUBMISSION

- The proposed solution should be based on a hub-and-spoke architecture to ensure efficient network management and optimal performance.
- Responding to this TOR, only Original Equipment Manufacturers (OEMs) are eligible to participate.
- To establish their eligibility, all responding OEMs must submit valid proof of compliance with the stipulated technical and regulatory requirements.
- Following the initial evaluation, those who score above 85 points will be shortlisted. Only the shortlisted OEMs will be invited to proceed with the Proof of Concept (POC) phase.
- POC test cases and evaluation criteria will only be shared with the shortlisted OEMs.
- Either the OEM or an Authorized agent nominated by the OEM will be eligible to conduct the POC.
- In case an Authorized agent is nominated to conduct the POC, the details of the authorized agent shall be provided together with the proposal. The nominated agent shall have at least 3 certified engineers on OEMs SD-WAN Technology and certifications shall be submitted as evidence.
- This RFP solely assesses proposed technologies and the bidders' technical capabilities. Shortlisted OEMs may nominate one or more of their authorized local agents or partners to submit technical and commercial proposals for the subsequent commercial procurement and implementation process.
- Additionally, all OEMs must clearly specify the device name and model in the proposal.

- OEM should provide all the detailed data sheets for each component proposed for the solution

7. INTELLECTUAL PROPERTY

All information pertaining to this project (documentary, audio, digital, cyber, project documents, etc.) belonging to the client, which the firm may come into contact within the performance of his/her, duties under this consultancy shall remain the property of the client who shall have exclusive rights over their use. Except for purposes of this assignment, the information shall not be disclosed to the public nor used in whatever manner without written permission of the Client in line with the national and International Copyright Laws applicable. All the material used in the project should be provided to the client with copyrights cleared.

8. INSTITUTIONAL ARRANGEMENTS, REPORTING AND SUPERVISION

8.1. The firm will work under the guidance and direction of the NCIT, and the D'MADD PMU will be coordinating the assignment.

8.2. The Firm must be able to travel to the Maldives where physical presence is needed and will be agreed upon with adequate time (Minimum Twice).

8.3. Unless approved and agreed by the D'MADD PMU, the firm shall not directly communicate, obtain, or share any documentation with any other party except NCIT.

8.4. The firm shall report to the Project Manager of the D'MADD Project PMU and NCIT, on the status of the assignment on a regular basis. The firm will work in a place agreed with the PMU and will be required to take part in all the relevant meetings.

8.5. All draft documents should be in Microsoft Word, and all final documents should be in Adobe Acrobat format, with relevant signatures where needed **if required**.

8.6. The NCIT and PMU shall approve all materials developed under this TOR.

8.7. The Firm shall ensure that all outputs are delivered on time, and in accordance with quantity, quality and timeframe in the proposal submitted by the firm based on the TOR.

9. QUALIFICATIONS AND EXPERIENCE

9.1. Requirement of the Firm

- Only Original Equipment Manufacturers (OEMs) are eligible to participate in proposal submission.
- Minimum five (5) years of proven experience in information and communication technology infrastructure development projects or similar assignments.
- Minimum of Five (5) completed scattered networking/ Internet services/ telecommunications project in the last three years.

10. REQUIRED DOCUMENTS

10.1. Document evidence and certifications as proof of the qualifications, experience and technology in Section 4 and Section 9. The document evidence may include project experience letters, corporate documents/ web documents, and contract services successfully provided by the firm.

11. SUBMISSION

11.1. The deadline for submission of the proposal is before 10:00 am on June 31st, 2025.

11.2. You may submit your proposal via email, postal mail, or hand delivery in sealed envelopes addressed to the project office.

Project Manager
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ANNEXTURE A

MANDATORY GENERAL AND TECHNICAL REQUIREMENT CHECKLIST
ALL THESEE CRITERIA SHOULD BE MET IN ORDER TO QUALIFY FOR THE POC

	General Requirements:	**Yes**	**No**	**Reference Document (Mention Document Name and Paragraph where the clause is mentioned)**	**Remarks**
1	Proposed solution should be in the Leaders/Challengers Quadrant in Gartner's Magic Quadrant for WAN Edge Infrastructure for a minimum of the last three years.				
2	The OEM must have a minimum of five successful SD-WAN deployments of a similar nature globally. The supplier must submit the project purchase order (PO) or project completion proof. The submission should include the project name, scope, summary, value, completion year, and any other supporting documents.				
3	OEM should declare in writing that the proposed devices are				

	not declared 'End of Support' for the next 5 years from the proposal submission date.				
4	All the solution components should be proposed as an on-prem solution. Cloud solutions will not be accepted.				
5	OEM should state the support process and the escalation matrix.				
6	The OEM should confirm that all the clauses and conditions in the RFP are met at the time of proposal submission.				
7	All the components of the proposed SD-WAN solution including the controller should be deployed onsite in Maldives.				
8	In the initial stage, SD-WAN Hub devices will be installed at the Primary data centre. But in the future, there will be another Hub at a Secondary data centre. Therefore, the proposed solution should support this expansion and ensure high availability at both primary and secondary data centres.				

TECHNICAL REQUIREMENT, EVALUATION CRITERIA AND MARKING SCHEME

	Technical Requirements:	**Evaluation Criteria**	**Marks**	**Reference Document (Mention Document Name, Page Number and Paragraph where the clause is mentioned)**	**Remarks**
9	The proposed solution should be a centralized, visualized and unified/distributed controller platform	Should support GIS Map Display and link bandwidth throughput (Display Topology Location wise)	1		
		Should support overlay topology display	1		
		Should support site application traffic display (Including application list and application traffic statistics of the sites which is sent and received)	1		
		Should support inter-site traffic monitoring (Including inter-site link details, applications and performance view)	1		
10	Proposed SD-WAN controllers should support distributed deployment to ensure disaster recovery	Controller should support active-active and active-standby deployment and support disaster recovery deployment	2		

11	The proposed SD-WAN solution must provide a highly reliable and robust network architecture	Should support control-plane and data-plane separation architecture	1		
		Sites can arbitrarily choose which hub sites to associate with and can select the priority of hub sites	1		
		Should support setting 5G/LTE as a backup WAN link, where no tunnel is built saving traffic	1		
		Controller should support different Southbound IP address	1		
12	The proposed controller should be scalable to up to 2500 CPE devices but not limited to	Supports upto 2500 CPE devices	1		
		Supports more than 2500 CPE devices	1		
13	The proposed controller should support multi-tenancy	No special point break down, points are decided on the weight/importance of the feature	2		
14	The proposed solution should support Zero-Touch Provisioning, with minimal effort required to deploy the solution. The supplier should explain the ZTP method in the technical proposal	No special point break down, points are decided on the weight/importance of the feature	1		
15	The proposed solution should support the physical and logical topologies of the SD-WAN network and real-time WAN connection performance, such as latency, jitter, packet loss, etc.	Should support visualization of both physical and logical topologies	2		
		Should support real-time WAN performance metrics	1		

16	The proposed solution should support real-time device interface traffic, link traffic and link quality monitoring. Also, it should support Real-time monitoring at the minimum 10-second level and should support protocols such as SNMP	Should support real-time device interface traffic, link traffic and link quality monitoring	2		
		Should support real-time monitoring at the 10-second level minimum	2		
		Should support SNMP protocol	1		
17	The proposed solution should support role-based and domain-based site management	Should support role-based and domain-based site management	2		
		Should support hierarchical account management (Ex. Global Admin/Regional Admin can configure Resource Group Admin/Operator)	1		
18	The proposed solution should support predicting the future WAN side traffic and execute predictive O&M based on the live network traffic, algorithms, etc	Should support predicting the future WAN side traffic based on live network traffic and predictive algorithms	2		
		Predictive O&M can be executed based on the traffic (Relevant supporting documents should be provided)	1		
19	The proposed solution should have device-level separation of the control and forwarding nodes	No special point break down, points are decided on the weight/importance of the feature	2		

20	The proposed solution should support flexible networking modes such as Hub-Spoke, Full mesh, etc.	Should support both Hub-Spoke and Full Mesh Deployment	2		
		If any other acceptable networking mode is supported (Relevant supporting documents should be provided)	1		
21	Proposed solution should support local Internet breakout at branch sites	No special point break down, points are decided on the weight/importance of the feature	1		
22	The proposed solution should support URL filtering	No special point break down, points are decided on the weight/importance of the feature	2		
23	Proposed solution should support IPS to prevent the sites from malicious attacks	No special point break down, points are decided on the weight/importance of the feature	2		
24	The proposed solution should support static routes, OSPF, and BGP routing protocols	Should support all mentioned three routing protocols Note: Points are given only if all three are supported	3		
25	The proposed solution should support First Hop Redundancy Protocols (FHRP)	No special point break down, points are decided on the weight/importance of the feature	1		
26	Proposed solution should support Bidirectional Forwarding Detection (BFD)	No special point break down, points are decided on the weight/importance of the feature	1		
27	The proposed solution should support link-state tracking	No special point break down, points are decided on the weight/importance of the feature	2		

28	CPE devices proposed for this solution should support interface working mode switching between Layer 2 and Layer 3	No special point break down, points are decided on the weight/importance of the feature	1		
29	The proposed solution should support services to access different hubs through route control	No special point break down, points are decided on the weight/importance of the feature	1		
30	The proposed solution should support deployment modes such as USB-based, e-mail-based, DHCP-based, etc	DHCP Deployment	1		
		URL Based/Email-based Deployment	1		
		USB Deployment	1		
		For any other additional methods only 1 point will be given even if there are multiple additional methods supported	1		
31	The proposed solution should support a REST API for third-party integrations	No special point break down, points are decided on the weight/importance of the feature	1		
32	The proposed solution should identify applications based on a signature database and first-packet inspection. It should also support the identification of customized applications. The Supplier should elaborate on the process of identifying customized applications	Should support application identification based on both mentioned points. Note: Points are given only if both are supported	2		
		Should support identification on customized applications, with acceptable elaboration of the process	1		

33	The proposed solution should support traffic steering based on the defined link SLA for the application, application priority and usage	Should support traffic steering based on all three mentioned. Note: Points are given only if all three are supported.	3		
34	The proposed SD-WAN solution must provide comprehensive QoS and HQoS capabilities to ensure optimal application performance, efficient bandwidth utilization, and intelligent traffic prioritization across the network	Should support QoS Capabilities	2		
		Should support HQoS Capabilities	3		
35	The proposed solution should support data compression to optimize the bandwidth usage	Supports data compression for specified Non-encrypted traffic.	3		
	Specifications for the Spoke Device				
36	The proposed device should be an enterprise-grade device	No special point break down, points are decided on the weight/importance of the feature	2		
37	SD-WAN throughput (IMIX) of the device should be a minimum of 80 Mbps	No special point break down, points are decided on the weight/importance of the feature	2		
38	Device should have a minimum of 8×1 Gbps copper ports and 2×1 Gbps fibre ports. Ports should support interchangeability between LAN and WAN	Fulfilling the mentioned port requirement	1		
		Minimum 2 x 1GE Optical WAN Ports	2		
		All ports can be configured as LAN or WAN 1 Point	1		
39	The device should have a built-in power supply with a UK plug	No special point break down, points are decided on the	1		

	type. Input voltage should be 100 V to 240 V	weight/importance of the feature			
40	Operational temperature of the device should be 0°C to 45°C	No special point break down, points are decided on the weight/importance of the feature	1		
41	Device should support IPv4/IPv6	No special point break down, points are decided on the weight/importance of the feature	1		
42	Device should support 5G/4G LTE Module	5G Supported	2		
		4G LTE Supported	1		
43	The device should support both SM and MM transceivers	No special point break down, points are decided on the weight/importance of the feature	1		
	Specifications for the Hub Device				
44	The proposed device should be an enterprise-grade device	No special point break down, points are decided on the weight/importance of the feature	2		
45	SD-WAN throughput (IMIX)of the device should be a minimum of 10 Gbps	No special point break down, points are decided on the weight/importance of the feature	2		
46	The device should support high availability	No special point break down, points are decided on the weight/importance of the feature	1		
47	The device should have a minimum of 4×1 Gbps copper ports and 2×1/10 Gbps fibre ports, which can be switched between LAN and WAN.	Fulfilling the mentioned port requirement	1		
		Minimum 2 x 1/10GE Optical WAN Ports	2		
		All ports can be configured as LAN or WAN 1 Point	1		
48	Device should support IPv4/IPv6	No special point break down, points are decided on the	1		

		weight/importance of the feature			
49	The device should support expanding the number of LAN/WAN ports with expansion cards. The OEM should clarify the maximum port count that can be expanded.	Expansion Slot	1		
50	Device should support and have an AC dual power supply	No special point break down, points are decided on the weight/importance of the feature	2		
51	Power Cable type should be C13-14 Connector	No special point break down, points are decided on the weight/importance of the feature	1		
52	Power supplies and expansion card modules should support hot swapping	No special point break down, points are decided on the weight/importance of the feature	1		
53	The device should support both SM and MM transceivers	No special point break down, points are decided on the weight/importance of the feature	1		
54	Operational temperature of the device should be 0°C to 45°C	No special point break down, points are decided on the weight/importance of the feature	1		