UNIDADE DE GESTÃO DE PROJECTOS ESPECIAIS
CABO VERDE TECHNOLOGY PARK – PHASE II

IFB Number:	011/CVTP-II/UGPE/2024
Purchaser:	Unidade de Gestão de Projetos Especiais (UGPE)	Ministério das Finanças e do Fomento Empresarial
Project:	Cabo Verde Technology Park (CVTP) – Phase II
Contract title:	Supply, Installation of IT Equipments and Training for the Technology Park Data Center (DC3): DataCenter IT DataCom – Phase II
Country:	Republic of Cabo Verde
Loan No. / Grant No.:	2000200005602
Procurement Method:	Open Competitive Bidding (International)
OCBI / LCB No:	GDS3

CLARIFICATION # 3

Question no.	Page	Section	Question	Answer
Q 07		Fabric architecture must be based on hardware VXLAN overlays Third-party integration enabled by open APIs L4-L7 service integration through service chaining Must support direct connection to external network Must support distributed default gateway on the ToR/Leaf to optimize the traffic in DC Support of service policy automation should be via RESTful API with JSON/XML format The solution implemented must be an extension of the infrastructure already on DC1 and deployed as such. The solution implemented must be an extension of the infrastructure already on DC1 and deployed as such. Supply the required infrastructure to implement and provide five years of maintenance on the required platforms to provide an SDN solution to integrate DC3 to the DC1 networks and a management layer to provide a single pane of glass. Equiments must integrate with the existing solution on DC1 to provide active-active between DC1 and DC3 on both security layers The platform must be delivered in a way to replicate the firewall layers on DC1 while providing: ● One physical chassis per layer ● Connections to Fabric: 4 X 10 GbE (at least) per FW Chassis. ● Connections to Management Network: 2 X 1 GbE (at least) per FW chassis. Current Scenario Also, it must provide failover and disaster recovery capabilities to the new infrastructure being deployed in Praia based on Openstack (Community Edition).	In order to support the technical requirements of the bidding document " active-active between DC1 and DC3 " , existing DC1's hardware and software configuration will affect DC3's configuration, so in order to achieve the above functions, could you provide the detail technical information of DC1, including DC1 technical architecture of cloud/network, and the related server and storage information, the detailed information includes, but is not limited to, the following: a) a list of network devices on the DC1 live network b) device models, versions, topologies, running services, and related functional protocols, etc..	We have implemented traditional IP networking architeture in DC1. The SDN from DC3 must be integrate with DC1 network fabric. In DC1, there are differents layer Core Switch, TOR Switchs and Managements Switchs. All equipments support standard protocols.

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		40/100GE uplink ports (fabric uplinks). At least 32 x 40/100GE ports. Latency < 1.5 microseconds Buffer (MB) > 30 Fixed Form factor switch (1 or 2 RU) Flow Table for Analytics, Fabric Insights, Netflow. Smart buffer capability (AFD / DPP). Dual AC Power supplies. Port Side Intake		The description "Smart buffer capability (AFD / DPP)" can be replaced by "Smart buffer capability (buffer management separate the elephant and mice flow into different queue, and support different queueing scheduling algorithms on each queue.)
Q 08		fixed Form factor switch (1RU) - Smart buffer capability (AFD / DPP). - Dual AC Power supplies. - 6 ports 40G/100G QSFP28 and 48 10/25GE SFP+ interfaces. - Flexible port configurations – 1/10/25/40/100G. - Latency < 1.5 microseconds - Throughput (Tbps) > 3.5 - Buffer (MB) > 30 - Port Side Intake	The bidding document mentioned some technical requirement which is belong to special vender's product, such as AFD, DDP, etc. It is unfair for all bidders in this open bidding project. AFD and DPP are actually elephant and mice flow scheduling and buffer allocation. Therefore, it is recommended to use general function description, for example, change "Smart buffer capability (AFD / DPP)." to "Smart buffer capability (mically adjusts the buffer allocation for mice and elephant flow queues and schedules mice and elephant flows)"	
		Fixed Form factor switch (1RU) - Smart buffer capability (AFD / DPP). - Dual AC Power supplies. - 6 ports 40G/100G QSFP28 and 48 10/25GE SFP+ interfaces. - Flexible port configurations – 1/10/25/40/100G.		
		Leaf Switch Technical Requirements ● Fixed Form factor switch (1RU) ● Flow Table for Analytics, Fabric Insights, Netflow. ● Smart buffer capability (AFD / DPP). ● Dual AC Power supplies. ● 6 ports 40G/100G QSFP28 and 48 10/25GE SFP+ interfaces. ● Flexible port configurations – 1/10/25/40/100G. ● Latency < 1.5 microseconds ● Throughput (Tbps) > 3.5 ● Buffer (MB) > 30 ● Port Side Intake		
		Spine Switch Technical Requirements ● 40/100GE uplink ports (fabric uplinks). ● At least 32 x 40/100GE ports. ● Latency < 1.5 microseconds ● Buffer (MB) > 30 ● Fixed Form factor switch (1 or 2 RU) ● Flow Table for Analytics, Fabric Insights, Netflow. ● Smart buffer capability (AFD / DPP). ● Dual AC Power supplies. ● Port Side Intake ● Network Architecture		
Q 09		○At least 5 Gbps Shaping with the possibility of upgrading up to 10 Gbps with license upgrade, ○Interfaces with bypass capability ○Redundant power supplies ○Solution should be provided with a right to use license (perpetual license for usage)	packetshaper is a unique product name of vendor, which leads to vendor and model binding in bidding documents, and tenders may fail. It is recommended to doublce check its usage scenarios and replace it with	We have correct the description, to be traffic shapping, instead of packetshaper present in the TDR.

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		Internet access should be implemented in DC3. This infrastructure comprises the following components: ● Routers acting as Internet Gateway (IGW). ● Packet shaper. ● DDOS protection system. ● Perimeter Firewall. ● ISP Circuits.	the function description of the device, such as "Traffic Shaping and Load Balancing Equipment".	
		The solution must include a packetshaper in DC3. Required specifications but not limited to: ● Visibility, Control and Monitoring. ● At least 5 Gbps Shaping with the possibility of upgrading up to 10 Gbps with license upgrade. ● Interfaces with bypass capability. ● Redundant AC power supplies. The supplier must propose the solution for the insertion of the device in the network and must propose any additional equipment if necessary. Solution should be provided with a right to use license (perpetual license for usage).		

Q 10		The objective is to implement a network solution for the DC3 data center and its respective interconnection to DC1. The physical architecture for the datacenter should follow the Spine & Leaf model. The solution must have a virtualization layer to implement the network services. The virtualization layer must be based on VXLAN technology that must implemented and fully licensed with perpetual licensing	In order to support the technical requirements of the bidding document " active-active between DC1 and DC3 " , existing DC1's hardware and software configuration will affect DC3's configuration, so in order to achieve the above functions, could you provide the detail technical information of DC1, including DC1 technical architecture of cloud/network, and the related server and storage information, the detailed information includes, but is not limited to, the following:
			  a) a list of network devices on the DC1 live network
			  b) device models, versions, topologies, running services, and related functional protocols, etc..
				"We have implemented traditional IP networking architeture in DC1.
				The SDN from DC3 must be integrate with DC1 network fabric.
				In DC1, there are differents layer Core Switch, TOR Switchs and Managements Switchs. All equipments support standard protocols. "

		Supply the required infrastructure to implement and provide five years of maintenance on the required platforms to provide an SDN solution to integrate DC3 to the DC1 networks and a management layer to provide a single pane of glass.		
		The Datacenters must adopt SDN based architecture and allow for the seamless integration of DC1 (Praia) and DC3 (São Vicente) as an extension of each other and the latter as disaster recovery target. It is expected that the SDN controller / software be made available as a high availability service		
		The solution should follow the Software Defined Networking (SDN) approach aligned with the existing installation on DC1 in order to fully integrate the two datacenters. The network services and policies must be implemented and maintained through a central entity such as an SDN controller or policy manager.		
		Required specifications but not limited to: · The solution implemented must be an extension of the infrastructure already on DC1 and deployed as such		

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		One IP Fabric and SDN controller cluster in each datacenter. ● One multi-site controller for SDN orchestration between datacenters. ● Datacenter services are consumed by customers through the WAN and Internet. ● Inter site DCI provides East-West connectivity between data centers ● Intra site DCI represents the communication between Fabrics in a multi-pod deployment. ● The WAN and the inter site DCI are implemented over transport networks. ● IGW (Internet Gateway) includes devices that allows the connection of the Datacenter to the Internet ● WG (WAN Gateway) includes devices that allow the connection of the datacenter to the transport networks. Section VII – Schedule of Requirements 124 ● Existing DC network is the DC1 networking infrastructure that currently exists. The network solution must address the following areas: ● IP Fabric and SDN controller. ● DCI connectivity. ● WAN connectivity. ● Internet connectivity. ● Connectivity with existing DC1 networks.		
		The DCI should be implemented with VxLAN technology. The DCI should prevent the propagation of faults and anomalies between Fabrics. The DCI solution uses the transport infrastructure that includes telco facilities between all datacenter and dark fiber between DC1 and DC3 using telco point-to-point Ethernet over DWDM. The transport infrastructure can be dedicated to the DCI or shared with the WAN. There are two types of DCI connectivity that should be addressed: ● Inter Site DCI: Between independent Fabrics. ● Inter Site DCI: Between PODs on the multi-pod Fabric. The Intra Site DCI only needs to be addressed if the solution includes a multi-pod Fabric between DC1 and DC3. The DCI solution must take into account that the transport infrastructure may not support multicast routing.		
Q 11		The bidder should consider that not all 12 resources will be available at the same time for attendance and should consider that two or more sessions must be considered for all topics. Attendance rates should be considered as minimal of 1/3 of the total resources of the teams in order not to disrupt day-to-day operations.	The description about training in the bidding document is not clear. Please provide the total days of required training and whether the training is overseas or local.	Please refer to page 132 for the answer.