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རྒྱལ་གཞུང་གི་གཞི་གཞི་ལྷན་ཚོགས།
ROYAL GOVERNMENT OF BHUTAN
ROYAL CIVIL SERVICE COMMISSION
Excellence in Service



ADDENDUM

RCSC/MISD/LAN/2016-17/02/

20th
April 14th, 2017

With reference to the NIQ for "RCSC LAN Revamp" published in Kuensel dated April 6th, 2017. The RCSC would like to inform all interested bidders that there has been slight changes in the specification, for details please check the www.rcsc.gov.bt or inquire with Mr. Gyelthsen @ 322491 (Ext. 218).


(Tashi Pem)
Director
RCSC

3. Technical Specifications

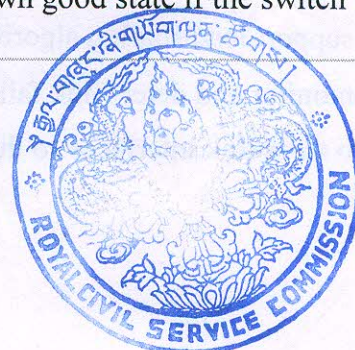
1	L2 Giga Switch 24 ports with 4*1G SFP 1/10G uplink, rack mountable	Compliance (Yes/No)
A Architecture		
1	The switch should have 24 x 10/100/1000 BaseT and should support 4 GE SFP uplink ports	
2	The Switch should support Stacking from Day 1 via standard interfaces for a scalable solution	
3	Should support 1000 Base- SX, LX, LH and T ports	
4	Should have at least 56 Gbps switching bandwidth	
5	Should have switching throughput of up to 41 million pps	
6	MAC Address table size of 15000 entries	
7	The Switch should be 19" Rack-Mountable / 1 rack unit (RU)	
B Resiliency and high availability		
1	Should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)	
2	Should support IEEE 802.1s Multiple Spanning Tree Protocol	
3	Should support load sharing algorithm for bridged and routed traffic	
4	Should monitor and detect link failure on uplink interfaces and can propagate the failure to downlink interfaces so that servers connected to those downlink interfaces can switch over to secondary interfaces.	
C Layer 2 features		
1	Should support IEEE 802.1Q (4000 VLAN IDs) and 1000 VLANs simultaneously	
2	Should support Multiple VLAN Registration Protocol (MVRP, IEEE 802.1ak) for dynamic registration and deregistration of VLANs on ports in a VLAN bridged network	
3	Should support Jumbo frames of 9000 bytes	
4	Should support IPv4 Static IP routing, RIP from Day 1 with support for OSPF in future	



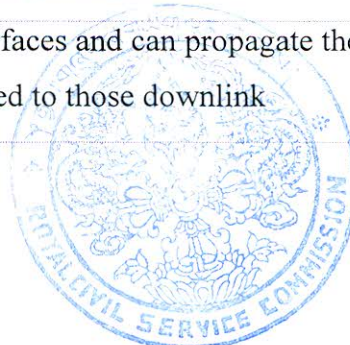
5	Should support IPv6 static routing	
6	Should support VRRP for redundancy	
7	Should support Multicast VLAN Registration (MVR) to distribute multicast streams across an Ethernet ring-based Layer 2 network and reduce the amount of bandwidth consumed by the multicast traffic	
D Security		
1	Should support MAC address limiting (per port and per VLAN) and MAC address move to detect MAC movement and MAC spoofing on access interfaces	
2	Should support port and VLAN Access control lists (Ingress and Egress)	
3	Should support IEEE 802.1X - Port, Multiple supplicant, VoIP VLAN	
4	Should support DHCP snooping, DHCP server and relay with option 82 for Layer 2 VLANs and Layer 3 interfaces	
5	Should support Dynamic ARP inspection (DAI), IP source guard	
6	Should support broadcast, unicast and multicast (BUM) storm control	
7	Should support TACACS+ and MAC RADIUS authentication for secure switch CLI logon	
8	Should support SSHv2 and HTTPs allowing secure access to the switch	
E Convergence and QoS		
1	Should support IGMP v1, v2, v3 and IGMP snooping	
2	Should support Sparse (SM), Dense (DM) and Source Specific (SSM) Protocol Independent Multicast	
3	Should support Multicast VLAN Registration Protocol (MVR)	
4	Should support Multicast Listener Discovery (MLD) snooping enables the switch to monitor MLD messages between IPv6 multicast routers and hosts	
5	Should support LLDP-MED (Media Endpoint Discovery) with voice over IP (VoIP) integration	
6	Should support per-port Rate Limiting setting ingress enforced maximums	
7	The switch should support at least 8 queues to ensure multiple level of traffic prioritization (data, voice, video)	
F Advance Features		



1	The switch should have active probes to track and monitor real time traffic across the network and to investigate network problems.	
2	Should support Policing/Rate-limiting of traffic to CPU	
3	Should support port security with Sticky MAC Addresses	
4	Should support 802.1ag Ethernet OAM, IEEE 802.3ah Link Fault Management (LFM) and Time domain reflectometry (TDR)	
5	Should have Dynamic Host Control Protocol (DHCP) Zero Touch feature enables a device to retrieve configuration files from the remote DHCP server during initial deployment with no end-user intervention	
6	Should be able to automatically configure ports with security, QoS, and other parameters based on the type of device connected to the port with profiles like Wireless access point, PC, PC plus IP phone, Layer 3 uplink, and Layer 2 uplink.	
7	Should be able to eliminate the complexities involved in configuring class of service (CoS) across the network by offering templates with preconfigured CoS values based on typical application requirements for key traffic classes	
8	Should detect Ethernet link failures and correcting the failures in less than 50 ms by forming a Ethernet protection ring.	
9	Should support Private VLAN to split a broadcast domain into multiple isolated broadcast subdomains and Q-in-Q to extend a Layer 2 Ethernet connection between two customer sites	
G	Manageability	
1	Web User Interface, CLI	
2	Should support Port mirroring and mirror traffic that is traversing interfaces or a VLAN on the switch to a different location for analysis	
3	Should support IPv6 management features like neighbour discovery (RFC 4861), Telnet, SSH, SNMP, NTP, DNS	
4	Should have monitoring technology like net-flow/s-flow to randomly sample network packets and send the samples to a monitoring station	
5	Should store multiple configuration and image files	
6	Should have the capability to revert to the last known good state if the switch	



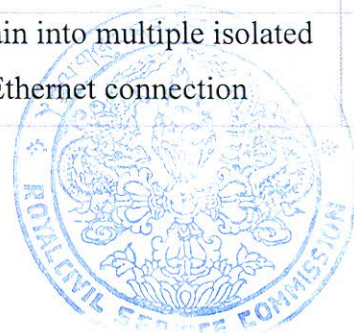
	image, configuration and the backup configuration files become damaged beyond repair	
7	Should support automatic configuration over the network from a pre-existing configuration file that is created and stored on a configuration server	
8	Should support automatic software download feature using the DHCP message exchange process to download and install software packages.	
9	Should support standard IP-MIB (RFC 4293) and SNMP v1, v2 & v3	
H	Certification	
1	UL-UL60950, FCC 47CFR Part 15 Class A, EN 55022 Class A, VCCI Class A, CISPR 22 Class A, EN 55024, EN 300386, ICES-003 Class A, CE	
2	EAL3 or above	
2	<i>L2 Giga Switch 16 ports with 2*1G SFP 1/10G uplink, rack mountable</i>	Compliance (Yes/No)
A	Architecture	
1	The switch should have 16 x 10/100/1000 BaseT and should support 2 GE SFP uplink ports	
2	The Switch should support Stacking from Day 1 via standard interfaces for a scalable solution	
3	Should support 1000 Base- SX, LX, LH and T ports	
4	Should have at least 56 Gbps switching bandwidth	
5	Should have switching throughput of up to 41 million pps	
6	MAC Address table size of 15000 entries	
7	The Switch should be 19" Rack-Mountable / 1 rack unit (RU)	
B	Resiliency and high availability	
1	Should support IEEE 802.3ad Link Aggregation Control Protocol (LACP)	
2	Should support IEEE 802.1s Multiple Spanning Tree Protocol	
3	Should support load sharing algorithm for bridged and routed traffic	
4	Should monitor and detect link failure on uplink interfaces and can propagate the failure to downlink interfaces so that servers connected to those downlink	



	interfaces can switch over to secondary interfaces.	
C	Layer 2 features	
1	Should support IEEE 802.1Q (4000 VLAN IDs) and 1000 VLANs simultaneously	
2	Should support Multiple VLAN Registration Protocol (MVRP, IEEE 802.1ak) for dynamic registration and deregistration of VLANs on ports in a VLAN bridged network	
3	Should support Jumbo frames of 9000 bytes	
4	Should support IPv4 Static IP routing, RIP from Day 1 with support for OSPF in future	
5	Should support IPv6 static routing	
6	Should support VRRP for redundancy	
7	Should support Multicast VLAN Registration (MVR) to distribute multicast streams across an Ethernet ring-based Layer 2 network and reduce the amount of bandwidth consumed by the multicast traffic	
D	Security	
1	Should support MAC address limiting (per port and per VLAN) and MAC address move to detect MAC movement and MAC spoofing on access interfaces	
2	Should support port and VLAN Access control lists (Ingress and Egress)	
3	Should support IEEE 802.1X - Port, Multiple supplicant, VoIP VLAN	
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8	Should support SSHv2 and HTTPs allowing secure access to the switch	
E	Convergence and QoS	
1	Should support IGMP v1, v2, v3 and IGMP snooping	



2	Should support Sparse (SM), Dense (DM) and Source Specific (SSM) Protocol Independent Multicast	
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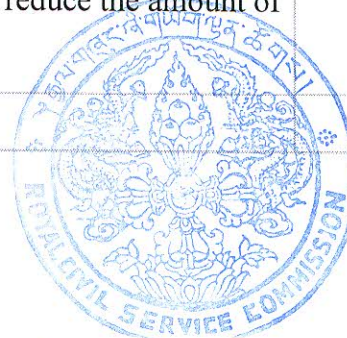


	between two customer sites	
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