

ANEXA la OFERTA TEHNICA

I Cerinte tehnice si descriere echipamente

I.1.(1 buc) Switch Layer 3 – 48 x 1G RJ45, 4 x 10G SFP+

Caracteristica	Descriere	Îndeplinire cerinta	Obs
Ports	48x10/100/1000 Gigabit RJ45		
Uplink ports	4x10G SFP+		
Performance	Switching capacity: 176 Gbps Stacking bandwidth: 480 Gbps		
Capacity	IPv4 routes: 1000 NetFlow entries: 24000 Switched virtual interfaces (SVIs): 48000		
Jumbo Frame Support	9198 bytes		
Authentication method	Kerberos, RADIUS, Secure Shell (SSH), TACACS+		
MAC Address Table Size	32000 entries		
Status Indicators	Port transmission speed, port duplex mode, system, status		
Routing Protocol	RIP-1, RIP-2, EIGRP, RIPng		
Type	Switch Layer 3 / stacable		
Features	ARP support, Access Control List (ACL) support, IPv4, support, IPv6 support, Link Aggregation Control Protocol, (LACP), MLD snooping, Multiple Spanning Tree Protocol, (MSTP) support, Port Aggregation Protocol (PAgP) support, Quality of Service (QoS), RADIUS support, Rapid Per- VLAN Spanning Tree Plus (PVRST+), Rapid Spanning Tree, Protocol (RSTP) support, Remote Switch Port Analyzer, (RSPAN), STP Root Guard, Shaped Round Robin (SRR), Syslog support, Trivial File Transfer Protocol (TFTP), support, Uni-Directional Link Detection (UDLD), VLAN, support, Virtual Route Forwarding-Lite (VRF-Lite), auto- negotiation, auto-uplink (auto MDI/MDI-X), layer 3 load, balancing,		

	trunking, DHCP snooping, Dynamic ARP, Inspection (DAI), Dynamic Trunking Protocol (DTP), support, Energy Efficient Ethernet, Flexible NetFlow (FNF), IGMP snooping		
Compliant Standards	IEEE 802.1D, IEEE 802.1Q, IEEE 802.3x, IEEE 802.3z, IEEE 802.1p, IEEE 802.1s, IEEE 802.1w, IEEE 802.1x, IEEE 802.3, IEEE 802.3ab, IEEE 802.3ad (LACP), IEEE 802.3u		
Routing Protocol	EIGRP, RIP-1, RIP-2, RIPng		
Remote Management Protocol	CLI, RMON 1, RMON 2, SNMP 1, SNMP 2c, SNMP 3, SSH, Telnet		
Interface	Ethernet 10Base-T/100Base-TX/1000Base-T, RS-232, console		
Connector Type	RJ-45, mini-USB Type B		
RAM	4 GB		
Software type	IOS IP Base		
Service & Support	„next business day” 1 year		
Power Supplies	AC Power Supply (120/230 V), Frequency 50/60 Hz, Power Provided 350 Watt, 1 (installed) / 2 (max)		
Form Factor	Rack Mount (1 RU), desktop		
Stack cables 0.5 m	2 bucati		
Power Stack cables 0.5 m	2 bucati		
Se va asigura mentenanta un an de zile + kit de montare in rack.			

I.1.1.(2 buc) Modul cu 4 porturi 10G SFP+

Aceste module vor avea fiecare 4 porturi in care se vor instala 4 bucati de SFP-10G-LR de la punctul I.3 (2 module x 4 porturi = 8 SFP-10G-LR).

Modulul va fi compatibil cu switch-ul de la punctul I.1 si va avea urmatoarele caracteristici:

Caracteristica	Descriere	Îndeplinire cerinta	Obs
Type of interfaces	10/100/1000/10000 Mbps		
Ports	4		
Conectivity LED	Yes		
Compatibility	Cu switch-ul descris la punctul I.1		
Se va asigura mentenanta un an de zile + montare in switch.			

Un modul se va instala in switch-ul descris la punctul I.1, urmand ca celalalt sa fie montat intr-un switch pus la dispozitie de compania de apa.

I.2. (4 buc) Switch Layer2 - 48 GigE, 2 x 10G SFP+

Caracteristica	Descriere	Îndeplinire cerinta	Obs
Enclosure Type	Rack-mountable – 1U		
Feature Set	LAN Base		
license	NERGY-MGT-100-K9, EW-DO-100-DE		
System Software	IOS LAN BASE		
Ports	48x10/100/1000 RJ45		
Uplink Interfaces	2 x 10G SFP+ (modulul de fibra este cuprins la punctual I.3)		
Network management Interface	10/100 Mbps Ethernet (RJ-45)		
Console ports	USB (Type-B), Ethernet (RJ-45)		
Available PoE Power	None		
Maximum stacking number	8		
Stack bandwidth	80G		
Forwarding Bandwidth	108Gbps		
Switching Bandwidth	216Gbps		
Forwarding Performance	130.9Mpps		
Maximum active VLANs	1023		
Address Table Size	16K (default)		
CPU	APM86392 600MHz dual core		
RAM	512MB		
Flash Memory	128MB		
Status Indicators	Per-port status: Link integrity, disabled, activity, speed, and full duplex System status: System, RPS, Stack link status, link duplex, and link speed		

Stacking cable	No		
Rack Mounting Kit	Yes		
Authentication method	Kerberos, RADIUS, Secure Shell (SSH), TACACS+		
Type	Switch Layer 2 / stacable		
Compliant Standards	IEEE 802.1D Spanning Tree Protocol IEEE 802.1p CoS Prioritization IEEE 802.1Q VLAN IEEE 802.1s IEEE 802.1w IEEE 802.1X IEEE 802.1ab (LLDP) IEEE 802.3ad IEEE 802.3af and IEEE 802.3at IEEE 802.3ah (100BASE-X single/multimode fiber only) IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports IEEE 802.1D Spanning Tree Protocol IEEE 802.1p CoS Prioritization IEEE 802.1Q VLAN IEEE 802.1s IEEE 802.1w IEEE 802.1X IEEE 802.1ab (LLDP) IEEE 802.3ad IEEE 802.3af and IEEE 802.3at IEEE 802.3ah (100BASE-X single/multimode fiber only) IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports		
Features	ARP support, Access Control List (ACL) support, IPv4, support, IPv6 support, Link Aggregation Control Protocol, (LACP), MLD snooping, Multiple Spanning Tree Protocol, (MSTP) support, Port Aggregation Protocol (PAgP) support, Quality of Service (QoS), RADIUS support, Rapid Per- VLAN Spanning Tree Plus (PVRST+), Rapid Spanning Tree, Protocol (RSTP) support, Remote Switch Port Analyzer, (RSPAN), STP Root Guard, Shaped Round Robin (SRR), Syslog support, Trivial File Transfer Protocol (TFTP), support, Uni-Directional Link Detection (UDLD), VLAN, support, DHCP snooping, Dynamic ARP, Dynamic Trunking		

	Protocol (DTP), support, IGMP snooping		
Network security	SSH, SSL and SCP RADIUS and TACACS+ SNMPv3 crypto 802.1x 802.1x Accounting / MIB 802.1x w/ port security 802.1x w/Voice VLAN 802.1x Guest VLAN 802.1x VLAN assignment 802.1x MAC-Auth Bypass BPDU/Root Guard Port Security Private VALN Edge Storm Control Block unknown unicast and multicast IGMP Snooping IGMP Filter/Throttle		
Remote Management Protocol	CLI, RMON 1, RMON 2, SNMP 1, SNMP 2c, SNMP 3, SSH, Telnet		
Management and Troubleshooting	Auto-MDOX TDR UDLD IP SLA Responder layer 2 / IP Traceroute SPAN RSPAN Express Setup Device Manager Cisco Network Assistant Smartports + Advisor Troubleshooting Advisor Drag-and-drop Cisco IOS Upgrade IP Address DHCP Autoinstall with saved configuration Configuration Replace DHCP Auto Image Upgrade DHCP Port Based Allocation Error Disable MIB		
Service & Support	„next business day” 1 year		
Power Supplies	AC Power Supply (120/230 V), Frequency 50/60 Hz, Power Provided 350 Watt, 1 (installed) / 2 (max)		
Form Factor	Rack Mount (1 RU), desktop		
Se va asigura mentenanta un an de zile + kit de montare in rack.			

In cele 2 porturi de fibra (ale fiecarui switch) descris mai sus se vor instala SFP-10G-LR (= 2 porturi x 4 switch-uri = 8 SFP-10G-LR) descrise la punctul I.3.

I.3. (16 buc) SFP-10G-LR – va trebui sa fie compatibile cu:

- switch Layer 2, 48 GigE, 2 x 10G SFP descris la punctul I.2
- switch Layer 3, 48 GigE, 4 x 10G SFP descris la punctul I.1
- modulul descris la punctul I.1.1.

Caracteristica	Descriere	Îndeplinire cerinta	Obs
Interface Type	SFP+		
Performance	10 Gbps		
Interface	LC duplex		
Hot-Swap	Yes		
Max cable length	10000 m		
Wavelength	1310 nm		
Power TX(min/max)	-8.2 dBmW/0.5 dBmW		
Power RX(min/max)	-14.4 dBmW/0.5 dBmW		
Power consuption	1 W		
Temperature (min/max)	-40 Celsius/ 85 Celsius		
Se va asigura mentenanta un an de zile + montare in switch-uri.			

I.4. (4 buc) Patch cord de fibra optica single mod, compatibile cu SFP-10G-LR descris la punctual I.3 si de lungime minim 10 m.

Descriere	Îndeplinire cerinta	Obs
Patch cord de fibra optica single mod , compatibile cu SFP-10G-LR descris la punctual I.3 si de lungime minim 10 m.		

Acordul pentru stabilirea programului si a planului de testare impreuna cu reprezentantii achizitorului	Îndeplinire cerinta	Obs