***ANNEX II + III:* TECHNICAL SPECIFICATIONS + TECHNICAL OFFER**

As modified by Corrigendum no 3 and Corrigendum no 4 to the Tender Dossier

**Contract title: Supply of IT equipment for four tax administrations in Bosnia and Herzegovina p 1 /…**

**Publication reference:** EC/BiH/TEN/18/009

**Columns 1-2 should be completed by the Contracting Authority**

**Columns 3-4 should be completed by the tenderer**

**Column 5 is reserved for the evaluation committee**

Annex III - the Contractor's technical offer

The tenderers are requested to complete the template on the next pages:

* Column 2 is completed by the Contracting Authority shows the required specifications (not to be modified by the tenderer),
* Column 3 is to be filled in by the tenderer and must detail what is offered (for example the words “compliant” or “yes” are not sufficient)
* Column 4 allows the tenderer to make comments on its proposed supply and to make eventual references to the documentation

The eventual documentation supplied should clearly indicate (highlight, mark) the models offered and the options included, if any, so that the evaluators can see the exact configuration. Offers that do not permit to identify precisely the models and the specifications may be rejected by the evaluation committee.

The offer must be clear enough to allow the evaluators to make an easy comparison between the requested specifications and the offeredspecifications.

|  **1.** **Item number**  | **2.** **Specification Required**  | **3.** **Specification** **Offered**  | **4.** **Notes, remarks, ref to documentation**  | **5.** **Evaluation Committee’s notes**  |
| --- | --- | --- | --- | --- |
| **1.1****QTY:****1 pcs** | **Switch type 1*** Switching capacity: min. 320 Gbps
* Throughput: min. 238 mpps
* Ports: min. 16x 10 Gigabit Ethernet port (without SFP+ modules) and min. 1x Gigabit Ethernet management port
* Memory: min 256MB flash and min. 512MB RAM
* “stack” connection between switch or any other technical solution that creates stack switches
* L3 functionality: static, dynamic RIPv2, VRRP. DHCP server.
* L2 functionality: supports up to 4094 active VLANs, Link Aggregation Protocol (LACP), support for Jumbo frame
* Security: hardware based ACLs, ports and VLANs based ACLs, up to 2000 ACL entries, time-based ACL list, IP source guard
* Support for RADIUS+ and TACACS authentication, Support for management and configuration over SSH protocol SSH, SNMP v1/2/3
* Support for web and console management
* AC power supply 220V/50Hz, and cable for power supply 220V length 3m
* Rack mount kit included (rack 19“, 1RU)
* User manual for installation and configuration
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| **1.2****QTY:****1 pcs** | **Layer3 Switch** * Min. 24 Gigabit Ethernet TX interfaces
* optional support for network module with 4 gigabit SFP based uplink ports
* optional support for network module with 2 ten gigabit SFP+ based uplink ports
* switch stacking support for data
* switching capacity - Min. 90 Gbps
* DRAM - Min. 1 GB
* FLASH - Min. 1 GB
* forwarding rate - Min. 90 Mpps
* AC power supply
* optional support for redundant power supply
* ipv6 routing in hardware
* total number of MAC addresses - Min. 16000
* ipv4 routes (including ARP) - Min. 4000
* supported VLAN IDs - Min. 4000
* jumbo frame support - 9198 bytes
* policy based routing
* Link Aggregation Control Protocol (LACP)
* VLAN tagging (IEEE 802.1q),
* Spanning Tree Protocol (IEEE 802.1D), Per VLAN Spanning Tree Protocol, Rapid Per VLAN Spanning Tree Protocol, Multiple Spanning Tree Protocol (MSTP)
* SNMPv1, SNMPv2, SNMPv3
* Full installation and configuration with testing
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| **1.3****QTY:****1 pcs** | **Router type 1*** Min 8 10/100/1000 Mb/s Ethernet ports
* Min 2 10/1 Gb/s SFP+ ports
* Min 16 GB DRAM
* Flash memory min 1 GB
* Optical transceiver module 10Gb/s SFP+ 20km on single mode optical fiber, 2 pcs.
* Optical transceiver module 10Gb/s SFP+ 300m on multimode optical fiber, 4 pcs.
* Pair of proper optical transceiver modules 1Gb/s SFP 20km on one single mode optical fiber (optical duplex), 1 pair (2 pcs)
* Optical transceiver module 1Gb/s SFP up to 500m on multimode optical fiber, 2 pcs.
* If full router functionality requires license , appropriately license must be

supply with the device* Routing protocol: static, dynamic RIP, OSPF, BGP, VRRP
* Encryption: IPSEC, OpenVPN, PPTP, PPPoE, L2TP, SSTP, IPIP
* Support for firewall mode: stateful filtering, source and destination NAT
* Cable for power supply min. 2m
* Power supply AC 220V
* Console port for configuration
* Rack-mountable (rack 19“), set for mounting (rack 19“, 1RU)
* Software for configuration router with Web interface
* Compatible cable for the installation
* User manual for router installation and configuration
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| **1.4****QTY:****1 pcs** | **Firewall type 1.*** Integrated Ethernet ports: 4 x 10Gbps SFP+ ports, , 4 x 1Gbps SFP ports, 1 x Ethernet RJ45 management ports 1Gb/s,

Included 2 x 10Gbps SFP+ optical transceivers for multimode fiber up to 300m and 4 x SFP 1 Gbps optical transceivers for multimode fiber up to 300m (1000Base-SX).* Threat Protection throughput: 3 Gbps or more
* Appropriate subscription of Threat Prevention for a period of 1 year
* Maximum IPsec VPN tunnels L2L: 2000 (Gateway to Gateway IPSEC tunnels) or more
* Maximum IPsec VPN tunnels: 2000 (Client to Gateway IPSEC tunnels) or more
* IPSec VPN throughput: 3Gbps or more
* Concurrent sessions: 1,9 Million or more
* The unit must not have wireless interface
* Supports device pairing under the following high availability configurations: Active/Active, Active/Passive
* Support for min.5 virtual domains
* Local disk: min. 235GB SSD hard disk
* 2 integrated power supply AC 220V, cable for power supply min 2m
* Software for router configuration with Web interface
* Set for mounting (rack 19“, max 2RU)
* User manual for installation, and configuration
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| **1.5****QTY:****1 pcs** | **Firewall type 2*** Integrated Ethernet ports: min 8 ports 10/100, min. 1x RJ-45 Console port and min. 1 USB 2.0 port
* Firewall throughput: 480 Mbit/s or more
* NGFW (IPS + Application control) throughput: min. 145 Mbps
* Appropriate NGFW subscription for 1 year period
* IPSec VPN throughput: min. 95 Mbps or more
* Ipsec VPN tunnels L2L: 95 or more
* Concurrent sessions: 50.000 or more
* Connections per second: 4,000 or more
* Unlimited users/IP license
* The unit must not have wireless interface
* AC power supply 220V and cable for power supply min 3m
* User manual for installation, and configuration
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| **1.6** **QTY:** **2 pcs**  |  **Blade server type 1** * Installed two-processor with minimum 2.1 Ghz speed, minimum PassMark points 11000 per single CPU, min 8 cores per single CPU
* Installed minimum 256 GB DDR4 memory
* Supported memory upgrade up to minimum 1.5 TB
* minimum 2 x PCI-Express 3.0 x 8 slots for additional PCIe cards
* Installed 2 x 10Gbit LAN network controller on board
* Installed 1 x 2 ports 16Gbps FC card.
* SAS RAID HDD module, support SAS, SATA i SSD
* minimum 2 x 240GB SSD HDD for RAID 1 level
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| **1.7** **QTY:** **1 pcs**  |  **Rack mount server** * Minimum required form factor 2 RU.
* Minimum four processor system,
* Installed processors: minimum 4x processor with minimum PassMark points 19.500 per single CPU and minimum 12 coers per CPU
* Memory slots: min 48, support for min 6Tb, min 2600 MHz
* Installed memory: min 1 TB, min 32GB modules
* Redundant fans
* Installed PSU: min 2x min 1600W
* Support for PCIE- slots: min 8
* Required ports: Serial, VGA, USB 3.0 and 2.0
* Installed HDD: min 2x min 240 SSD
* Support for NVDIMM capacity 192GB or better
* Installed controller: min Raid 0,1,5, 6, 10, cache memory protection if system power fails.
* Integrated or network card: min 4-port min Gigabit Ethernet, or better
* Integrated or network card: min 10Gb min 4-port Base-T ethernet, or better
* FC HBA: min 16Gb dual port adapter provided
* Support for OS:

SUSE® Linux® Enterprise Server , Red Hat® Enterprise Linux * Installation and configuration
 |   |   |  |
| **1.8** **QTY:** **2 pcs**  |  **Blade server type 2** * two-processor server, minimum PassMark points 19000
* minimum 256 GB (8x32GB) 2Rx4 DDR4-2400 R ECC 2400MHz
* Memory up to minimum 512 MB

 o support for Advanced ECC, Mirror Channel or Rank Sparemode* minimum 2 x PCI-Express 3.0 x 8 slots for additional Mezzanine

cards* min 1x 10Gbit LAN network controller on board
* min 1x 2 16 Gbps FC ports (HBA Adapter).
* SAS RAID HDD module, support SAS, SATA and SSD with min 1

GB cache memory* minimum 2 x 300GB SAS 10k 6Gb/s 2,5” HDD for RAID 1 level

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| **1.9** **QTY:** **2 pcs** | **Server type 2** * Format: Rack server, maximum 1 rack unit height
* Installed 2 processors with minimum 2.1 GHz processor speed, minimum passmark 15000 and minimum 12 cores per CPU.
* Memory: min. 256GB DDR4 ECC, upgradable up to 1.5TB
* HDD: min 2x 240GB SSD 2.5", min. 8x SFF SAS/SATA/SSD bays
* Controller: Storage Controller with min. RAID 0/1 and min. 1GB cache with flash or battery protection
* Network: min. four ports 10/100/1000 RJ45;
* Installed Minimum one FC card with minimumm16Gb speed dual port
* Optical drive: DVD-RW SATA
* Remote management: Included (not OS part) software for installation of OS with all drivers, and configure, update, monitor, and run servers remotely
* Power: Full redundancy. Hot plug.
* Ports: Video, USB 2.0 ports and serial console port(s); At least 2xPCIe 3.0 x16 slots available
* Support OS: MS Windows server 2016, Linux
* Additional: 1U Rail Kit with Cable management arm,
* Full installation and configuration with testing
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| **1.10** **QTY:** **1 pcs**  | **Chassis for blade server type 1** * Must support the above offered blade servers
* Minimum form factor 10U height and minimum 16 half-high blade servers or 8 full-high blade servers,
* Minimum 4 positions for I/O connection blades,
* Minimum supported 2 x redundant I/O blades;
* Minimum installed:

o 2x10Gbit Ethernet L2 switch with min 16 internal 10Gbps, min 8 external ports SFP+ 10Gbps. Min 4 SFP+ 10Gbps modules up to 50m in external ports o Optical cable 10Gbit LC-LC 50/125um multimode with LC duplex connectors 5 m: 4 pcs * + Optical cable 10Gbit LC-LC 50/125um multimode with LC duplex connectors 3 m: 4 pcs
	+ Optical cable 10Gbit LC-LC 50/125um multimode with LC duplex connectors 2 m: 16pcs
	+ Minimum 2x16 Gbps FC switch with minimum 24 ports.
* The possibility of an installation for minimum 4 power supply units (PSU)
* Installed redundant integrated management blade for remote LAN access, and graphical console redirection

 o minimum 1 LAN ports and 1 Serial port * WEB GUI software for the configuration, management and monitoring chassis and installed blade servers
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| **1.11** **QTY:** **1 pcs**  | **Chassis for blade server type 2** Must support the below offered blade serversup to 10U height and min 14 blade serversSupport for minimum 3 redundant interconnect I/O fabric:o Ethernet (1G and 10G)o Fibre Channel (8 Gbps)Minimum installed:o 1 network switch with min 24 1/10Gbit (1/10Gbps) with support for both LAN and SAN connections. The switch must have minimum 14 downlink ports. Support for FCoE and iSCSi protocols. 2x 10 Gbps internal/external cross connects for redundancy and stacking. VLAN Tagging,Pass-Thru and Link Aggregation supported on all uplinks.o 1 Fiber Channel Switch with 16 x 16 Gbps ports. The switch has tosupport 8 Gbps FC for back compatibilitythe possibility to install additional network switch and FC switch of the samespecification for redundancyintegrated minimum 4 power supply units (PSU) 220V 2 fan unitsintegrated one management module with the ability to add one more for thepurposes of redundancyFront PanelWEB GUI software for the configuration, management and monitoring chassisand installed blade servers |  |  |  |
| **1.12** **QTY:** **1 pcs**  | **Storage type 1** * Redundant controller with minimum 4x 16 Gbps Fiber Channel ports per

controller * Minimum 6 GB read/write cache per controller
* 8x 16 Gb SFP transceivers for controller ports included with the device
* Up to 24 SFF SAS/MDL SAS/SSD drives
* RAID Levels supported: min RAID 1, 5, 6, 10
* Form factor storage and expansion - 2U
* Storage and expansion redundant power supply
* 1x Storage expansion min 24 SFF SAS/SATA/SSD drives
* Drive enclosure interface type min 6Gb SAS
* Installed 44x min 1.2 TB 6G SAS SFF (2,5–inch) HDDs
* Installed 4x min 800 GB SSD SFF
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| **1.13** **QTY:** **1 pcs** | **Storage type 2** * Rack Mount SAN storage with min. 24 drive bays
* Height: max. 3RU
* Dual redundant controllers
* Supported capacity min. 400 TB with optional drive enclosures
* Support for SAS, NL SAS and SSD drives
* Min. 16 GB cache per controller
* Cache data protection - back up to non-volatile memory or disk
* Min. 512 LUNs
* Thin Provisioning enabled
* Snapshots enabled, min. 512 snapshots included
* Tiering enabled
* Remote replication to same storage model enabled
* RAID Support: 1, 5, 6, 10
* Support up to four connections with options of 8Gb FC, 10GbE, 1GbE per controller
* Disk included: min. 3x 400GB 12G SSD drive
* Disk included: min. 14x 1.2TB 12G SAS 10k SFF drive
* Connectivity included: fiber channel connectivity, min. 4x 8 Gb FC per controller
* Included min. 8x multimode LC/LC 3m optical cable
* Redundant power supply
* Rack mount kit
* License: All needed licenses
* Full installation and configuration with testing
* Training: Training for min. 2 administrators with at least one day duration
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| **1.14** **QTY:** **8 pcs** | **Desktop computer with monitor** * Case: Microtower
* CPU: 4 core, 6MB cache, PassMark points min. 7.000
* Memory: min.16GB DDR4
* HDD: min.500GB 7200rpm SATA
* Optical DVD-RW
* Graphics: integrated HD
* Ports: min. 3x USB 2.0, 3x USB 3.0, 1x USB Type-C; 1x DisplayPort or 1x DVI-D or HDMI, 1x audio in/out and 1x Gigabit Ethernet RJ-45
* Slots: min. 1xPCIe x1 and 1xPCIe x16
* Monitor screen size: min 21,5”
* Resolution: 1920x1080
* Brightness: min.250cd/m2
* Contrast: min. 1000:1
* Response time: max.5ms
* Appropriate digital video cable for connecting the monitor and computer
* Keyboard: USB, localized BiH language
* Mouse: optical, scroll, USB
* Software-Licensed OS that support integration with enterprise-class directory services MS Active Directory
* Monitor, keyboard and mouse has to be same manufacturer as computer
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|  **1.15** **QTY:**  **2 pcs**  | **OnLine UPS** * Apparent power 3KVA min
* Active Power 2.7KW min
* Technology OnLine
* Network Management Card
* Output voltage 230 V
* Full installation and configuration with testing

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|  **1.16** **QTY:**  **1 pcs**  | **Rack with additional equipment** * Server rack 42RU
* Dimension WxD= 600x1200; +/- 10%
* Rack mount console min. 17'' rack mounted 1U
* IP Console Switch KVM rack mounted: 8 channel switch for keyboard, monitor, mouse, Inclusive CAT5 cabling and USB adapter for 8 channels.
* 2x Power Distribution Unit, 3 Phase, 16A
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