Task: Research on technologies for the infrastructure to-be (Hardware, Hypervisor, Firewall, etc.) and list the components for the future infrastructure!

Table 1: Applications and runtimes of the LowTech GmbH

Department	Platform	Application	Common Specs	Runtime
Operations	4 Laptops			Windows 11
Customer Service	5 Laptops	CRM System Of Sales Department		Windows 7 SP 3
Sales	10 Laptops	Lead Management		Windows 11 Microsoft Dynamics 365
Sales	1 Application Server	CRM	5th Gen Intel® Xeon® Platinum 8592+ Processor (Cores 64/ Threads 128, 3.9 GHz) 256 DDR5 RAM (Samsung 128GB DDR5 *2) 18 TB HDD (SEAGATE)	RHEL 9.4 SAP HANA
Sales	1 Storage Server	CRM Storage		Ubuntu 24.04 LTS
Warehouse	1 Application Server	Delivery		Debian Server 12.5 bookworm PHP 8.3.6 program MySQL 8.3.0 Database on Server
Operations	1 Application Server	Order Management		Windows Server 2022 Microsoft SQL 2022 Java JSP-Application (Java 21) Tomcat 9.0 Server
Warehouse	10 Clients	Delivery		Debian Desktop 12.5 bookworm Web browser Firefox 126.0 on Client
Sales	1 Stroage Server	CRM Storage	5th Gen Intel® Xeon® Platinum 8592+ Processor (Cores 64/ Threads 128, 3.9 GHz) (256) 128 + 128 DDR5 RAM (Samsung 128GB DDR5 *2) 18 TB HDD (SEAGATE) 250 GB SDD (WD Blue)	Ubuntu 24.04 LTS
Finance	1 Application Server	Legacy Accounting Software		RHEL 9.4 MySQL Community 8.4.0 LTS Java Application (Java 21) JBoss Application Server (EAP 8.0.0)
HR	1 Application Server	Payroll		Windows Server 2022 Microsoft SQL 2022 Java Servlet-Application (Java 21) Tomcat 9.0 Server
Web-shope	1 Web Server	CMS		Debian Server 12.5 bookworm Drupal 10.2.6
Finance	4 Clients	Office		Windows 11
HR	3 Clients	Payroll		Windows 11
Sales	1 Application Server	CRM	Intel Xeon Max-9480 (Cores 56/ Threads 112, 3.5 GHz)	RHEL 9.4 SAP HANA
Warehouse	1 Application Server	Delivery		Debian Server 12.5 bookworm PHP 8.3.6 program

Operations	1 Application Server	Order Management	(288) 64 + 64 + 64 + 64 + 32 GB DDR5 RAM 8 TB HDD (SEAGATE) 250 GB SDD (WD Blue)	MySQL 8.3.0 Database on Server Windows Server 2022 Microsoft SQL 2022 Java JSP-Application (Java 21) Tomcat 9.0 Server
Finance	1 Application Server	Legacy Accounting Software		RHEL 9.4 MySQL Community 8.4.0 LTS Java Application (Java 21) JBoss Application Server (EAP 8.0.0)
HR	1 Application Server	Payroll		Windows Server 2022 Microsoft SQL 2022 Java Servlet-Application (Java 21) Tomcat 9.0 Server
Web-shope	1 Web Server	CMS		Debian Server 12.5 bookworm Drupal 10.2.6

Table 2: Hardware Specifications of the **to-be** infrastructure

Department	Hardware	Induvial Specs	Common Specs	Power consumption
Operations	4 Laptops	ThinkPad X13 Gen 2 AMD Ryzen5		50W
Customer Service	5 Laptops	ThinkPad T410 Intel Core i5 520M		100W
Sales	10 Laptops	ThinkPad X13 Gen 2 AMD Ryzen5		50W
Sales	1 Application Server	Core 8 32GB RAM 1 TB HDD	5th Gen Intel® Xeon® Platinum 8592+ Processor (Cores 64/ Threads 128, 3.9 GHz) 256 DDR5 RAM (Samsung 128GB DDR5 *2) 18 TB HDD (SEAGATE)	567W
Sales	1 Storage Server	Core 10 32GB RAM 10 TB HDD		
Warehouse	1 Application Server	Core 8 16GB RAM 500 GB HDD		
Operations	1 Application Server	Core 10 64GB RAM 1.5 TB HDD		
Warehouse	10 Clients	Raspberry Pi 5 VM SPEC: - Core 2 4GB RAM (Total 40GB), 250 GB HDD (Total 2.5TB)		12W
Sales	1 Stroage Server	Core 10		600 W

		32GB RAM 10 TB HDD	5th Gen Intel® Xeon® Platinum 8592+ Processor (Cores 64/ Threads 128, 3.9 GHz) (256) 128 + 128 DDR5 RAM (Samsung 128GB DDR5 *2) 18 TB HDD (SEAGATE) 250 GB SDD (WD Blue)	
Finance	1 Application Server	Core 8 16GB RAM 500GB HDD		
HR	1 Application Server	Core 8 16GB RAM 1.5TB HDD		
Web-shope	1 Web Server	Core 10 128GB RAM 250GB SDD		
Finance	4 Clients	Raspberry Pi 5 VM SPEC: - Core 2 4GB RAM, 250 GB HDD		12 W
HR	3 Clients	Raspberry Pi 5 VM SPEC: - Core 2, 4GB RAM (Total 12GB), 250 GB HDD (Total 1TB)		12 W
Sales	1 Application Server	Core 6 32GB RAM 1 TB HDD	Intel Xeon Max- 9480 (Cores 56/ Threads 112, 3.5 GHz) (288) 64 + 64 + 64 + 64 + 32 GB DDR5 RAM 8 TB HDD (SEAGATE) 250 GB SDD (WD Blue)	600 W
Warehouse	1 Application Server	Core 8 16GB RAM 500 GB HDD		
Operations	1 Application Server	Core 10 64GB RAM 1.5 TB HDD		
Finance	1 Application Server	Core 6 16GB RAM 500GB HDD		
HR	1 Application Server	Core 6 16GB RAM 1.5TB HDD		
Web-shope	1 Web Server	Core 8 128GB RAM 250GB SDD		

Total we have **3 Servers** and all are having same load. Main two servers are primary and 3rd server is for redundancy.

S/W Firewall: -

Pros:

- Cost-effective and flexible.
- Highly customizable to specific needs.
- Can leverage existing hardware or be virtualized.
- Strong community support and optional commercial support.

Cons:

- May require more initial setup and configuration.
- Potentially higher ongoing management effort if deployed on multiple machines.

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H/W Firewall: -

Pros:

- Simplified deployment and management.
- High performance and dedicated security features.
- Centralized control with minimal maintenance.
- Vendor support and regular updates.

Cons:

- Higher initial cost.
- Less flexibility in customization compared to open-source software solutions.

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- Supports High Availability configuration
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PERFORMANCE | **TECH SPECS**

IPERF3 TRAFFIC

L3 Forwarding: 18.60 Gbps

Firewall: 18.55 Gbps (10k ACLs)

IPsec VPN: 3.24 Gbps (AES-GCM-128 w/QAT)

IMIX TRAFFIC

L3 Forwarding: 11.76 Gbps

Firewall: 5.1 Gbps (10k ACLs)

IPsec VPN: 810 Mbps (AES-GCM-128 w/QAT)

Hypervisor: -

https://www.vmware.com/products/workstation-player/workstation-player-evaluation.html.html

Refences

https://www.intel.com/content/www/us/en/products/sku/237261/intel-xeon-platinum-8592-processor-320m-cache-1-90-ghz/specifications.html (5th Gen Intel® Xeon® Platinum 8592+ Processor)

https://ubuntu.com/download/server#how-to-install (Ubuntu 24.04 LTS)

https://www.wiredzone.com/shop/product/10023809-samsung-m321raga0b20-cwk-memory-128gb-ddr5-4800mhz-rdimm-mem-dr512l-sl01-er48-9881 (Samsung DDR5 128GB)

https://www.intel.com/content/www/us/en/products/sku/232592/intel-xeon-cpu-max-9480-processor-112-5m-cache-1-90-ghz/specifications.html (Intel Xeon Max-9480)

https://www.seagate.com/gb/en/products/enterprise-drives/exos-x/2x18/ (SEAGATE Exos 2X18 Hard Drive)

https://www.seagate.com/gb/en/products/hard-drives/barracuda-hard-drive/ (SEAGATE BarraCuda 3.5" Hard Drive 8 TB)

https://www.speicher.de/arbeitsspeicher-64gb-ddr5-cisco-ucs-c240-m7-ram-rdimmsp510833.html (DDR5 64GB*4)

https://www.amazon.co.uk/Seagate-ST8000DM004-Barracuda-internal-Silver/dp/B075WYBQXJ?ref_=ast_sto_dp&psc=1 (Seagate BarraCuda 8TB HDD)

https://www.westerndigital.com/products/internal-drives/wd-blue-sa510-sata-2-5-ssd?sku=WDS250G3B0A (Western Digital 250GB WD Blue)

https://erpiseasy.com/2020/12/30/what-is-sap-crm/#:~:text=The%20latest%20version%20is%20SAP,supported%20until%2031st%20December%202027. (SAP CRM 7.0)

https://shop.netgate.com/products/pfsense-software-subscription-tac-ent-support?variant=41227198234739 (Firewall S/W)

https://shop.netgate.com/products/8200-max-pfsense?variant=40539952349299 (Firewall H/W)

https://buyzero.de/products/offizielles-raspberry-pi-5-desktop-kit?variant=44632424251659 (Raspberry Pi 5 * 17)

https://developers.redhat.com/products/eap/download?extIdCarryOver=true&sc_cid=701f2000001Css5AAC (Red Hat JBoss Enterprise Application Platform)