Linux in the Enterprise

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Services using the Linux Server

For Lopes Manufacturing, all key network services are located at the central Phoenix Corporate Office. This streamlines management, performance, and security. The Windows Server hosts the primary domain controller, DNS, and DHCP, providing a centralized hub for user authentication, name resolution, and automatic IP addressing throughout Lopes Manufacturing's network. A backup DNS and DHCP server has been added to the network to provide redundancy in the event that the primary server fails or loses service. The database server is also placed at the corporate office due to the sensitive nature of Lopes Manufacturing processes and Classified materials. The database server is secured through physical measures, such as locked doors, CCTV cameras, and biometric scanners, as well as through routine backups, ensuring that all data is secure and that an appropriate archive is maintained and well managed. Another benefit of keeping the database at the corporate office is that it enables simpler maintenance schedules without compromising connectivity to the leading network via MPLS. The email server is also located under the same roof. This enables reliable, high-performance internal and external communications, with the added benefit of the Corporate offices' robust cybersecurity measures. The web server is utilized on the Linux Ubuntu 22.04 LTS system. Linux is used for its stable, secure platform, which also makes it a cost-effective web hosting option. Linux requires fewer system resources while providing strong server-based security. Placing the web server at the main corporate office, as with all other services, provides administrators with easy access to perform physical network changes, enabling faster maintenance, quicker patch rollouts, and high performance for both internal and external users. This centralized setup helps improve network efficiency by simplifying maintenance schedules, reducing administrative hours, and providing quick access, thereby shortening the duration of costly downtime during service outages. As with most business networks, future-proofing is essential, and Lopes Manufacturing's network diagram is not lacking in this regard. The current design enables further expansion, long-term reliability, and performance across all satellite locations, without the risk of major redesigns or configuration issues.

6x6 Table

Web Server	Apache Web Server on Ubuntu 22.04 LTS	2 CPU cores, 4-8 GB of RAM, and 50+ GB of storage	Intel Xeon CPU, 16 GB of RAM, 1 TB SSD, and RAID 1	Dell PowerEdge R250	Dell EMC PowerEdge R250 Server
Database Server	Microsoft SQL Server on Windows Server 2022	4 CPU cores, 16-32 GB of RAM, and 200+ GB of storage	Intel Xeon CPU, 32 GB of RAM, 2 TB SSD, and RAID 10	Dell PowerEdge R350	Dell EMC PowerEdge R350 Server
Email Server	Microsoft Exchange Server on Windows Server 2022	4 CPU cores, 16-32 GB of RAM, and 200+ GB of storage	Intel Xeon CPU, 32 GB of RAM, 2 TB SSD, and RAID 10	Dell PowerEdge R350	Dell EMC PowerEdge R350 Server
LDAP Server	Active Directory Domain Services on Windows Server 2022	2 CPU cores, 8-16 GB of RAM, and 100+ GB of storage	Intel Xeon CPU, 16 GB of RAM, 1 TB SSD, and RAID 1	Dell PowerEdge R250	Dell EMC PowerEdge R250 Server
DNS Server	Windows Server DNS	2 CPU cores, 4-8 GB of RAM, and 50+ GB of storage	Intel Xeon CPU, 16 GB of RAM, 1 TB SSD, and RAID 1	Dell PowerEdge R250	Dell EMC PowerEdge R250 Server
DHCP Server	Windows Server DHCP	2 CPU cores 4-8 GB of RAM, and 50+ GB of storage	Intel Xeon CPU, 16 GB of RAM, 1 TB SSD, and RAID 1	Dell PowerEdge R250	Dell EMC PowerEdge R250 Server

References:

IT Creations, Inc. (2026). *Dell EMC PowerEdge R250 Server*. Itcreations.com. https://www.itcreations.com/dell/dell-emc-poweredge-r250-server?gad_source=1&gad_campaignid=117936401&gbraid=0AAAAADwYO2_lMmBZKwLlt A6ZwU-OV2jk2&gclid=Cj0KCQiA4pvMBhDYARIsAGfgwvzwGoiyKbtAIyqrt_553j5IhYAVUsiQ9ue TGAn0juNPUd0_gEjZHl4aAhBrEALw_wcB#specifications

IT Creations, Inc. (2026). *Dell EMC PowerEdge R350 Server*. Itcreations.com. https://www.itcreations.com/dell/dell-emc-poweredge-r350-server?gad_source=1&gad_campaignid=117936401&gbraid=0AAAAADwYO2_lMmBZKwLlt A6ZwU-OV2jk2&gclid=Cj0KCQiA4pvMBhDYARIsAGfgwvxqmsJywGFZTUe3G1bK3O3fZWcZGhw yb9fDQxWRlO-JsUtXs1IH2oAaAju6EALw_wcB