## Case Study – Lean Development

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| The company Lean Development Pty Ltd (LD) is a small software house comprising 20 technical staff, 4 office workers (secretary, assistants and accountants) and the CEO. Reporting relationships and the LD organisational structure are shown below.    *Figure 1: Lean Development Pty Ltd - Organisational Structure, ©Melbourne Polytechnic, 2022, RN*  LD specialises in developing and maintaining webpages for Small to Medium-sized Businesses (SMB). Employees have flexible hours; and on the average 15 people are in the office during working hours. Network The office network is protected by a firewall that controls access to/from the Internet. All office devices are connected to a 48-port gigabit switch and use the subnet 192.168.***99***.0/24. IPv4 addresses of devices on the office network are manually assigned. IP addresses are difficult to maintain and the current manual management has in the past resulted in problems because of address conflicts. Computers and users Staff members at LD have PCs or laptops that physically connect to the network. Most of these workstations run Windows 10 Professional; however, there are also five systems that run Windows 10 Home edition. Each staff member is using a local account to log on to his/her workstation.  Technical staff have Administrator access on their workstations. They tend to inadvertently change critical settings on their system which frequently results in configuration problems.  One of the support engineers also acts as local system administrator. If this staff member is not reachable, there is no one who can assist users with computer related issues.  The local administrator password is the same on all workstations. This password is known to all staff at LD. Printers Two network printers are available in the office. Office personnel use one printer, the other printer is used by the developer and the support teams. Applications Office personnel use Microsoft Office and cloud-based accounting applications for their day-to-day activities.  Technical staff have Microsoft Office and standard Microsoft development tools installed locally on their workstations. They also use a cloud-based source control system.  All staff use Internet based email. Data use Office personnel store all data on their local workstations. Some of this data needs to be shared with other office personnel but not with other staff members.  Technical staff (developer and support teams) store critical code and other data locally on their workstations. Some of this data needs to be shared with other technical staff members but not with the office personnel. When accessing this local data, technical staff require fast read performance.  All managers and the CEO share confidential management data among themselves but they also need full access to data belonging to technical staff and office personnel.  All staff currently exchange and share data using Internet based email; technical staff also use portable USB devices for exchanging and sharing data.  Mailboxes can store data only for a limited time because of mailbox size restrictions. Mailbox clean-up has resulted in loss of important data and caused problems for LD in the past. Staff therefore often copy confidential data to their personal portable devices which they take home.  Technical staff members, their team leaders and their manager ***each*** currently store 6 GB of business-related data on their workstations. Office personnel, their manager and the CEO ***each*** store currently 2.5 GB business related data on their workstation. Over the next 2 years, each user’s data is expected to grow by 40% per year.  LD is yet to finalise what data needs to be migrated to the new cetralised system. New virtualisation environment LD is in the process of upgrading their network and server infrastructure. As part of this process a local virtualisation environment was recently installed at LD. This private cloud is using Hyper‑V installed as a Windows 2019 Datacentre Edition role services. LD owns the hardware and software; however, management and operation of this environment is outsourced to MP Tech Solutions Ltd (MP Tech). LD has the ability to deploy and manage Virtual Machines (VM) and can assign resources to VMs (including virtual disks) as needed. This virtualisation environment can cater for a system availability of 99.8%. LD can also use this infrastructure for bare-metal backups to a network share. MP Tech stores the most recent backup of the environment off site. LD is contractually committed to use this private cloud environment for the next 3 years. Location LD have recently moved to their current premises. They are very happy with the location and do not intend to relocate or increase the existing office and work area. The premisses consist of one single large office room shared by all staff and containing all equipment. As there is no separate computer room available, communications equipment and the virtualisation infrastructure are located in a corner of the office. Equipment cabling near this office corner is currently not secured and poses a hazard. Staff also complain about the noise coming from the equipment. Requirements LD wishes to initially deploy a single server as a VM in the Hyper-V virtualisation environment. They plan to deploy additional servers as the business grows. For the initial deployment LD identified the following requirements:   1. Control network access centrally for users and computers in the office. 2. Improve network management capabilities. 3. Provide a central store for sharing data. 4. Ensure that staff can access resources only in accordance with their role. 5. Ensure a single disk failure on the server will not result in loss of data. 6. Use disk striping to optimise read performance of the storage system. 7. Ensure there is no more than 24 hours data loss in case of a system failure. 8. Business-related data for all staff must be stored on the local network. 9. Deployed storage must accommodate the anticipated data growth for the next two years. 10. Formulate a migration plan and estimate the migration duration. 11. Investigate feasibility of using a local email server with an SLA of 99.9%. 12. Present the design and a solution outline and obtain written approval by the LD to proceed. 13. Compile the designed solution in a document and submit the network server design by 31/01/2021. 14. The sever is to be operational in production one day after approval of the design.   In addition to the above listed requirements, LD asked that the following points should be addressed with minimal impact on costing:   1. Noise must be controlled to ensure compliance with the company’s WHS processes and guidelines. 2. Risks caused by potential safety hazards must be controlled.  Project Management LD has outsourced project management and coordination of all activities for the environment upgrade to MP Tech.  A senior MP Tech consultant acts as project manager and central point of contact for all matters relating to LD. |