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**Information Technology**

***ICTICT522 – Evaluate vendor products and equipment***

**Project Portfolio**

Resource Version: 2.0

First Published: March 2023

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| --- | --- |
| Student name: | Manuel |
| Assessor: | Richard |
| Date: | 10/10/2025 |
| Business this assessment is based on: | King Edward VII College |

Section 1: Business requirements review

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| --- | --- |
| About the business  *Provide an overview of the business and its operations and objectives.* | King Edward VII College, founded in 2010, is a Registered Training Organization (RTO) that provides training through VET courses in business and management. It provides high-quality training, following the VET Quality Framework standards.  Its mission is to provide high-quality industry training that engenders participation and achievement.  **The courses offered are (4):**   * Management * Marketing * Human Resources * International Business   **Their structure is (24 staff members):**   * 1 CEO * 1 Marketing Manager * 1 Marketing Assistant * 1 Human Resources Manager * 1 Finance Manager * 1 Administration Officer * 1 IT Manager * 1 Receptionist * 1 Academic Manager * 1 Student Services Officer * 14 trainers   **Target Market:**  All individuals (residents or foreigners) who wish to enter the industry or are already working in:   * Business * Administration   And wish to formalize or develop their skills.  **Operations:**  The college has a campus in Melbourne CBD and wants to expand to Sydney and Brisbane (6 months)  **Operational plan (3 years):**   * Upgrade current ICT system to be faster * Improve web site information * Conduct annual internal audit * Develop and implement workforce plan * Develop and implement a cultural sensitivity and awareness program for staff * Implement staff performance management review system * Identify suitable location for Sydney and Brisbane campuses * Provide information sessions showcasing the College * Fit out new campuses ready for student admissions in February * Interview staff for commencement in new campuses * Develop an on-line learning platform for all courses * Staff performance reviews * Undertake scoping study for possible offshore campus   **Operational objectives:**   1. Upgrade the current ICT system to be faster. 2. Improve website information and functionality. 3. Conduct an annual internal audit. 4. Develop and implement a workforce plan. 5. Develop and implement a cultural sensitivity and awareness program for staff (PD). 6. Implement a staff performance management review system. 7. Identify suitable locations for the Sydney and Brisbane campuses. 8. Provide face-to-face information sessions showcasing the College. 9. Fit out new campuses, ready for student admissions in February. 10. Interview and recruit staff for commencement in the new campuses. 11. Develop an online learning platform for all courses. 12. Conduct staff performance reviews (annual). 13. Undertake a scoping study for a possible offshore campus. 14. Establish two new campuses (Sydney and Brisbane). 15. Offer online blended learning. 16. Continually improve the quality of service (pre-enrolment, course delivery, and support), while remaining price competitive. 17. Focus on the provision of courses required by industry. 18. Maintain and improve effective communication channels with all stakeholders to ascertain industry requirements. 19. Consistently satisfy individual client needs while developing the knowledge and skills required by industry. 20. Target identified growth markets with planned, market-appropriate campaigns, employing a variety of promotional strategies. 21. Offer attractive fee structures (maintain price competitiveness). 22. Continually improve the skills, knowledge, and effectiveness of management and staff through a commitment to professional development (PD). 23. Regularly review the effectiveness of all our operations and make improvements where and when necessary.   **Projections**:  1. Increase enrolments of at least 10% annually  2. The hiring of human resources is projected in:   * training staff * assessment * medium * administration   according to the table in Workforce Development.  3. Review of the plan every 6 months for management to decide if human resource levels are appropriate |
| Business requirements  *Provide your own evaluation of the business’ requirements, as well as what you consider are priorities for the business.* | 1. **Business Vision & Scope**   **Current Situation**   |  |  | | --- | --- | | **Opportunities** | **Threats** | | 1. Potential for offshore delivery 2. Target market experiencing growth 3. To target other States and Territories 4. Current portfolio of courses popular in target markets 5. Potential to apply for Government funding | 1. Changes in Industry legislation affecting students 2. Possible adverse effects of government policy changes 3. High level of competition from other training providers in relation to target market plus competition for staff 4. Instances of other RTO’s bad practice creating poor perception of training providers to clients 5. Predicted uncertainties in the world economy impacting level of demand for training 6. Low price courses offered by competitors 7. Failing to satisfy clients’ demands 8. Unskilled trainers 9. Ageing workforce |   **Strategic Objectives**   1. To be a leader in vocational education and training 2. To establish and maintain high quality infrastructure supporting clients and staff 3. To be well led, high performing, profitable and accountable 4. To develop our people and resources   **Operational Objectives**   1. Upgrade the current ICT system to be faster. 2. Improve website information and functionality. 3. Conduct an annual internal audit. 4. Develop and implement a workforce plan. 5. Develop and implement a cultural sensitivity and awareness program for staff (PD). 6. Implement a staff performance management review system. 7. Identify suitable locations for the Sydney and Brisbane campuses. 8. Provide face-to-face information sessions showcasing the College. 9. Fit out new campuses, ready for student admissions in February. 10. Interview and recruit staff for commencement in the new campuses. 11. Develop an online learning platform for all courses. 12. Conduct staff performance reviews (annual). 13. Undertake a scoping study for a possible offshore campus. 14. Establish two new campuses (Sydney and Brisbane). 15. Offer online blended learning. 16. Continually improve the quality of service (pre-enrolment, course delivery, and support), while remaining price competitive. 17. Focus on the provision of courses required by industry. 18. Maintain and improve effective communication channels with all stakeholders to ascertain industry requirements. 19. Consistently satisfy individual client needs while developing the knowledge and skills required by industry. 20. Target identified growth markets with planned, market-appropriate campaigns, employing a variety of promotional strategies. 21. Offer attractive fee structures (maintain price competitiveness). 22. Continually improve the skills, knowledge, and effectiveness of management and staff through a commitment to professional development (PD). 23. Regularly review the effectiveness of all our operations and make improvements where and when necessary.   **Priority Operational Objectives**  Considering the available information and expansion plans, I think the college’s priorities are:   1. Upgrade the current ICT system to be faster 2. Improve website information and functionality 3. Develop an online learning platform for all courses   **Priorities for this project at the end of Section 1**  **Project Objectives & Scope (project Scope Fixed at the end of Section 1)**  **Scope**  In general, it involves technologically preparing the college for expansion. Since it is not specified, I will assume that the employee hardware upgrade is only for the current 24 employees. The IT infrastructure upgrade is limited to Melbourne only. Also, based on quick cost calculations, the budget is only sufficient for one of the three locations.  **Requirements**  1. Modernization of IT infrastructure (server or cloud services)  2. Remote Access (VPN or cloud services interface)  3. Improve the campus network (Wi-Fi and network)  4. Software / hardware Quality Assurance (test and trial)  5. Documentation and support  **Out of Scope**  1. Website building  **Constraints**  1. Budget: $15,000  2. Time: 6 months  **Risk Management**   |  |  | | --- | --- | | **Risk** | **Australian government changing policy in relation to industry** | | 1. Accepting policy change will be a constant factor to manage 2. An understanding of this should be instilled in all staff 3. Develop ability to foresee and react quickly to change 4. Maintain effective communication channels with stakeholders 5. Diversification of source markets 6. Develop product range | | | Related to Strategic Objectives: All  Responsibility: CEO & Administration Manager | |  |  |  | | --- | --- | | **Risk** | **Significant drop in cash flow** | | 1. Identify operating costs as per future plans and past performance 2. Identify available finance 3. Efficient invoicing and debt recovery 4. Accurate income projections 5. Close monitoring of expenditure 6. Arrange overdraft facilities 7. Scenario planning | | | Related to Strategic Objectives: All  Responsibility: CEO & Administration Manager | | | **Risk** | **Failure to recruit planned number of clients** | | 1. High quality delivery of all services 2. Swift reaction to feedback 3. Skilled, motivated staff 4. Attractive fee structures 5. Effective market research 6. Allocate finance for each market 7. Monitor performance 8. Take early corrective action if not meeting targets or expectations 9. Maintaining effective relationships with clients 10. Maintaining effective communication channels with all stakeholders | | | Related to Strategic Objectives: 1, 2, 3  Responsibility: CEO | |  |  |  | | --- | --- | | **Risk** | **The world recession and the domino effect** | | 1. Diversification of source markets 2. Target markets with strong growth forecasted 3. Monitor the economic trends 4. Regularly review performance in line with anticipated market conditions 5. Develop culture of accepting continual change 6. React quickly to change 7. Scenario planning 8. Maintaining effective communication channels with all stakeholders | | | Related to Strategic Objectives: 1, 3  Responsibility:CEO | |  |  |  | | --- | --- | | **Risk** | **Over committing resources** | | 1. Balance activities with the amount of finance available for investment 2. Financial planning 3. ICT systems 4. Monitoring of cash flow 5. Review invoicing and debt recovery system 6. Swift response to identified issues 7. Accessing financial advice | | | Related to Strategic Objectives: 1, 3  Responsibility:CEO & Administration Manager | |  |  |  | | --- | --- | | **Risk** | **Adverse changes in market conditions** | | 1. Effective communication channels 2. Continuous market research 3. Monitor new markets and overall recruitments trends for all market segments 4. Scenario planning 5. Develop working knowledge of potential markets 6. Networking 7. Maintaining effective communication channels with all stakeholders | | | Related to Strategic Objectives: 1, 2, 3  Responsibility:CEO | |  |  |  | | --- | --- | | **Risk** | **Changes to relevant legislation** | | 1. Emphasis on professional, ethical practices with all stakeholders 2. Staff training 3. Leading by example 4. Policy implementation and monitoring 5. Effective communication channels with all stakeholders 6. Ability to manage change 7. Managing available finance for re-investment | | | Related to Strategic Objectives: All  Responsibility:CEO | |  |  |  | | --- | --- | | **Risk** | **Shortage of, and difficulty in recruiting, appropriate qualified, skilled trainers and assessors and other key staff** | | 1. Development of workforce plan 2. Offer attractive salary packages, including full-time contracts to trainers and assessors 3. Development of further HR policies and procedures 4. Provide opportunities for career progression 5. Develop stimulating and enjoyable working environments 6. Commitment to training and development 7. Commitment to professional development 8. Succession planning to deal with ageing workforce | | | Related to Strategic Objectives: 1 & 4  Responsibility**:** CEO | |  |  |  | | --- | --- | | **Risk** | **Failure to meet and manage client’s expectations** | | 1. Accurate and timely communication with potential and current clients 2. Management of recruitment activities 3. Up to date ICT system 4. Continuous improvement system 5. Regularly review learning and teaching approaches, resources, structure and systems 6. Client management policies in academic and support services 7. Industry liaison 8. Reviewing effectiveness of communication channels with clients 9. Employing a continuous improvement approach to all operations 10. Continuous market research and action 11. Systematic feedback on management performance and personal reflection | | | Related to Strategic Objectives: All  Responsibility**:** CEO & Administration Manager | |  |  |  | | --- | --- | | **Risk** | **Failure to comply with legislation** | | 1. Consistently implement compliant policies and procedures 2. Continuous improvement system 3. Commitment to training and development 4. Systematic review of policies and procedures 5. Regular reviews of all operations | | | Related to Strategic Objectives: All  Responsibility: CEO & Administration Manager | |  |  |  | | --- | --- | | **Risk** | **Competitors undercutting prices** | | 1. Maintain competitive pricing policy 2. Monitor competitors’ prices and quality 3. Regularly review financial management models and processes 4. Continue focusing on quality 5. Continue strategy of quality brand promotion | | | Related to Strategic Objectives: All  Responsibility: CEO | |  |  |  | | --- | --- | | **Risk** | **Failure to control expenditure** | | 1. Effective financial planning and review 2. Co-ordination of activities 3. Systematic review of practice 4. Financial management and control systems 5. Facilities management 6. Implementation of efficient processes 7. Efficient procurement of products and services 8. Cost comparisons prior to purchasing | | | Related to Strategic Objectives: 1, 2, 3  Responsibility:CEO & Administration Manager | |  |  |  | | --- | --- | | **Risk** | **Only providing business and management courses** | | 1. Weighing the relative advantages of diversification and specialisation 2. Monitor recruitment trends in the market 3. Forecasting 4. Match new and planned courses to market demand 5. Cost benefit analysis 6. Developing reputation for being a specialist in business and management courses 7. Developing market share for delivery of business and management courses | | | Related to Strategic Objectives: 1  Responsibility:CEO | |  |  |  | | --- | --- | | **Risk** | **Ineffective planning** | | 1. Experienced management team 2. Continuous market research 3. Planning system 4. Organisation structure and systems 5. Regular review of structure, systems and procedures 6. External liaison 7. Maintaining effective communication channels with all stakeholders | | | Related to Strategic Objectives: All  Responsibility:CEO & Administration Manager | | | **Risk** | **Non-payment of course fees** | | 1. Effective recruitment policies 2. Review of recruitment policies and market segments 3. Efficient invoicing 4. Attractive payment structures 5. Payment plans 6. Cash flow management 7. Timing of collecting fees | | | Related to Strategic Objectives: 4  Responsibility:CEO & Administration Manager | |  |  |  | | --- | --- | | **Risk** | **Rate of growth in client numbers** | | 1. Systematic review of systems and practice 2. Buying in knowledge and skills 3. Sourcing reliable market information 4. Strategic and operational planning 5. Review and, if indicated, amend management structure 6. Develop policies and procedures 7. Regular reviews of capacity and operation of all functional and curriculum areas 8. Good communication channels with stakeholders 9. Recruitment policy 10. Finance available for expansion | | | Related to Strategic Objectives: 1, 3 & 4  Responsibility: CEO & Administration Manager | |  |  |  | | --- | --- | | **Risk** | **Unethical or unprofessional practices of staff (when employed)** | | 1. Staff selection processes 2. Staff monitoring systems 3. Previous experience of managing staff 4. Swift reaction to feedback 5. Termination of agreements 6. Maintain currency of market recruitment trends 7. Maintain relationships with HR organisations | | | Related to Strategic Objectives: All  Responsibility: CEO & Administration Manager | |  |  |  | | --- | --- | | **Risk** | **Small staff team** | | 1. Identify and source potential casual staff to call on in times of sickness and holidays 2. Planning for holidays and leave 3. Maintain relationships with HR organisations 4. Offer incentivised pay structure for casual staff | | | Related to Strategic Objectives: All  Responsibility: CEO & Administration Manager | |  1. Stakeholders  |  | | --- | | **Stakeholders** | | CEO | | Marketing Manager | | Marketing Assistant | | Human Resources Manager | | Finance Manager | | Administration Officer | | IT Manager | | Receptionist | | Academic Manager | | Student Services Officer | | trainers | | Students | | IT Manager |  1. Functional Requirements & Non-Functional requirements  |  |  |  |  | | --- | --- | --- | --- | | **Scope** | **Requirement** | **Type** | **Description** | | 1. Modernisation of IT Infrastructure | Storage Scalability | Functional | The system must allow the storage space (from 2.5 TB onwards) to be increased or decreased quickly and seamlessly, based on campus requirements. | | Workload Processing | Functional | The server or cloud service must support the critical campus applications (LMS, student management system, and databases) with a response time under 2 seconds during peak periods. | | Backup Mechanisms | Functional | The system must execute automatic, daily backups of all critical data (2.5 TB) with a retention period of at least 30 days. | | Uptime Guarantee | Non-Functional | The infrastructure must guarantee a minimum availability of 99.9% (Tier 3 or cloud equivalent). | | Server Latency | Non-Functional | Latency between the main campus and the server must be under 50 ms to ensure a smooth user experience. | | Data Security | Non-Functional | The infrastructure must implement encryption-at-rest and in-transit (AES-256) to protect all student and staff data. | | 2. Remote Access | Internal Resource Access | Functional | Authorised users (staff and faculty) must be able to access internal network resources (shared drives, LMS) from remote locations using their standard network credentials. | | Multi-Platform Support | Functional | The remote access service must be compatible with common operating systems (Windows, macOS, iOS, and Android). | | Multi-Factor Authentication (MFA) | Non-Functional | The remote access system (VPN or portal) must require and enforce Multi-Factor Authentication (MFA) for all external connections. | | Connection Performance | Non-Functional | The remote connection must offer a minimum transfer speed of 5 Mbps per concurrent user to handle document and video downloads. | | Tunnel Encryption | Non-Functional | The remote communication tunnel must utilise robust encryption protocols (e.g., IKEv2/IPsec or TLS 1.3). | | 3. Campus Network Improvement (Wi-Fi and Network) | Wireless Coverage | Functional | The Wi-Fi network must provide full and continuous coverage in 100% of all teaching, administrative, and common areas on each campus. | | Network Segmentation | Functional | The network must enable the creation of Virtual Local Area Networks (VLANs) to separate student, administrative staff, and IoT device traffic. | | User Density | Non-Functional | Access Points (APs) must be capable of supporting a minimum of 50 simultaneously connected devices per classroom without service degradation. | | Speed Standard | Non-Functional | The Wi-Fi network must operate on the Wi-Fi 6 (802.11ax) standard or newer, and the wired network must be Gigabit Ethernet (1 Gbps). | | Centralised Management | Non-Functional | All network devices (APs, switches, and firewalls) must be manageable from a single, centralised administration console. | | 4. Software / Hardware Quality Assurance | Testing and Trial Plan | Functional | First, trial the products and then make a comprehensive Quality Assurance (QA) plan must be developed and executed, covering functionality, load, and security for all new systems prior to production deployment. | | Hardware Vetting | Functional | All enterprise laptop models (Core i5/Ryzen 5) must undergo a pilot trial with at least 10 end-users for 2 weeks before bulk purchasing. | | Solution Availability | Non-Functional | New systems must be tested to ensure 100% availability during operating hours (8:00 am to 6:00 pm). | | Acceptable Performance | Non-Functional | The new hardware/software must meet the defined Key Performance Indicators (KPIs), such as laptop login time (under 30 seconds). | | Error Handling | Non-Functional | Systems must log and handle errors gracefully, providing clear notifications for technical support and preventing user data loss. | | 5. Documentation and Support | Technical Documentation Creation | Functional | Complete documentation must be generated and delivered, including network diagrams, server/cloud configuration manuals, and Disaster Recovery Procedures (DRP). | | User Manual Generation | Functional | Simple, accessible user manuals must be created for staff on using remote access and connecting to the new Wi-Fi network. | | Service Level Agreement (SLA) | Non-Functional | The support team must respond to critical failures (total network or server loss) within a timeframe not exceeding 15 minutes (SLA). | | Knowledge Base | Non-Functional | An internal knowledge base with common troubleshooting guides must be established for the support team. | | Staff Training | Non-Functional | Campus IT staff must be trained in the administration and support of the new network infrastructure and cloud services. | |
| Conflicts and overlaps  *Based on the information you have about the business identify both conflicting and overlapping business requirements. Give at least one example of each.* | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Conflict: Requirement vs Requirement** | 1 | 2 | 3 | 4 | 5 | | 1 | - | **X** | **X** | **X** | - | | 2 | - | - | - | **X** | - | | 3 | **-** | - | - | - | - | | 4 | **-** | **-** | - | - | - | | 5 | - | - | - | - | - |  1. *Modernization IT - 2. Remote Access - 3. Improve Network - 4. Quality Assurance - 5. Documentation & Support*   **Conflicts:**   * 1 vs. 3: Carrying out both projects at the same time is a very ambitious task; in terms of time and budget, it is not possible to complete them in 6 months. * 1 vs. 2: The selection of remote access technology cannot begin until it is determined whether an on-premise server or cloud services will be used, which will affect the activity schedule. * 1 vs. 4: Conducting proof of concepts and trials for all products is very time-consuming. Therefore, the purchase and testing of devices/software/services will be delayed, and this phase cannot begin until the client is satisfied with the trial. * 2 vs 4: Conducting proof of concepts and trials for all remote access services is very time-consuming. Therefore, licensing and testing of devices/software/services will be delayed. |

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| Budget and resources  *Describe the budget and resources available for the project. If you are completing the case study business, identify this information from the simulation pack. If this is your own business, you will need to confirm this information and record it here.* | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Overlapping: Requirement vs Requirement** | 1 | 2 | 3 | 4 | 5 | | 1 | - | **X** | - | - | **X** | | 2 | - | - | - | - | **X** | | 3 | - | - | - | **X** | - | | 4 | - | - | - | - | - | | 5 | - | - | - | - | - |  1. *Modernization IT - 2. Remote Access - 3. Improve Network - 4. Quality Assurance - 5. Documentation & Support*  * 1 vs 2: If cloud services are used, remote access methods such as VPNs are not necessary. * 1 vs 5: Product/service documentation should be provided by each provider's support team as well as our team. * 2 vs 5: Product/service documentation should be provided by each provider's support team as well as our team. * 3 vs 4: Performing network performance tests can negatively impact campus signal statistics and cloud service access tests.   **MoSCoW Matrix**   |  |  |  |  | | --- | --- | --- | --- | | **Must Have** | **Should Have** | **Could Have** | **Won’t have** | | Software / hardware Quality Assurance (test and trial) | Documentation and support | Modernization of IT infrastructure based on promise-server | Improve the campus network, replacing all current infrastructure | | - | Improve the campus network, upgrading current hotspots | Remote Access by VPN | - | | - | Remote Access by cloud services interface | - | - | | - | Modernization of IT infrastructure based on cloud-services | - | - |   **Resources: Available & Needed**  The following resources are available for the project. The following resources will be reused. Basically, all employee devices will be maintained, and only the necessary ones will be purchased.  Resourves Available   |  |  |  | | --- | --- | --- | | **Item** | **Quantity** | **Type** | | Router enterprise | 1 | Hardware | | Computer PC | 24 | Hardware | | Computer monitor | 24 | Hardware | | Router enterprise | 1 | Hardware | | Server | 1 | Hardware | | Switch L2 | 1 | Hardware | | Cables | Bundle | Hardware | | Wi-Fi Modem | 2 | Hardware | | Windows 7 pro | No information | Software | | Office 2010 Pro | 24 | Software |   Resources Needed   |  |  |  | | --- | --- | --- | | **Item** | **Quantity** | **Type** | | ISP Services | 1 | Service | | Cables cat 6a | Bundle | Hardware | | Switch L2 x48 ports | 1 | Hardware | | Switch L2 x 24 ports | 2 | Hardware | | AP | 4 | Hardware | | Linux DHCP server | 1 | Software | | Cloud Data Service | 1 | Service | | Cloud Backup service | 1 | Service | | Cloud Users Account | 25 | Service | | Cloud Office Suite Licences | 25 | Service |   **Fixed Project Objectives & Scope**  **Priorities for this project**  Due to the limitations seen in the conflict, overlap and MoSCoW matrices, the scope of the project will be limited based on priorities.  **Scope**  The project will focus on providing the college with the necessary infrastructure for its expansion plans, as well as meeting its requirement to test and trial all hardware before and after purchase.  By using Cloud technologies, the use of VPNs and all additional security measures is avoided, which drastically reduces testing time, and the budget will be allocated to IT Modernization and testing.  **Requirements**  1. Modernization of IT infrastructure: Using cloud technology to move current infrastructure to cloud-based technologies. Migration of current data to Cloud solutions  2. Remote Access: Provide access to business applications via the Internet while meeting functional requirements.  3. Improve the campus network: Improve campus Wi-Fi coverage, speed, and reliability by upgrading current hardware to higher-performance wireless technology and adding more wireless access points across campus.  4. Software / hardware Quality Assurance: Request trail of products and services then perform unit testing on each hardware unit, run diagnostic tests for faults, perform integration testing, perform connectivity testing, perform performance testing, and perform load testing.  5. Documentation and support: Provide documentation for all purchased hardware, software, and services. Provide quick-help manuals, contact information, and warranty and technical support information from the hardware/software/cloud service manufacturers.  **Out of Scope**  1. Website building  2. Migrating current business applications to the new cloud services  3. Any type of configuration on the Desktops  **Constraints**  1. Budget: $15,000  2. Time: 6 months  3. Test and trial all new software/hardware/service  **Work Breakdown**   1. **Market and Product Research** 1.1 Market research for hardware, software, and cloud services 1.2 Evaluation of vendors and proposed solutions 1.3 Vendor trial schedule and product demonstrations 2. **Modernization of IT Infrastructure** 2.1 Assessment of current on-premises infrastructure 2.2 Migration planning to cloud-based technologies 2.3 Data migration to selected Cloud solutions 2.4 Validation of cloud environment performance and security 2.5 Post-migration review and optimization 3. **Remote Access** 3.1 Role configuration 3.2 User configuration 3.3 Security settings 3.4 Assigning user accounts to employees 4. **Campus Network Improvement (Wi-Fi and Network)** 4.1 Network assessment and coverage analysis 4.2 Upgrade of existing network hardware to high-performance wireless technology 4.3 Installation of additional wireless access points across campus 4.4 Network optimization, speed testing, and reliability validation 4.5 Performance monitoring and fault management 5. **Software / Hardware Quality Assurance** 5.1 Product trial and initial inspection of hardware/software units 5.2 Unit testing and diagnostic fault analysis 5.3 Integration and connectivity testing 5.4 Performance and load testing 5.5 Documentation of test results and corrective actions 6. **Documentation and Support** 6.1 Compilation of documentation for all purchased hardware, software, and cloud services 6.2 Development of quick-help manuals and support guides 6.3 Inclusion of manufacturer contact, warranty, and technical support information 6.4 Establishment of centralized documentation repository |

Section 2: Identifying, testing and evaluating vendor products and equipment

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| Vendor products and equipment  *Describe the products/equipment that you believe could meet the business’ needs. Then document your research about potential vendor products and equipment.*  *You should identify a minimum of two possible vendors for each of the products/equipment you have identified as relevant to the business’ needs.*  *Include the technical details to clearly articulate the alternatives to the business.*  *Also include costs.*  *Also include screenshots of the details on the vendors website.* | **Desired products and services**  My estimates show that in one year, with a 10% increase in enrolment (currently 500), considering the maximum number of staff members needed (12), there would be around 600 people on campus. Therefore, the college's Wi-Fi network could easily support everyone on its premises for at least the first year.  Due to budget constraints, it is more cost-effective to look for a high-speed business ISP plan; this will save on installation costs.  The network configuration will be: ISP **->** Router Enterprise **<-** Server (DHCP)  -> sw1 (x48) <- Pcs (x25)  <- wifi modem (x2)  -> sw2 (x24) -> sw3 <- AP (x2)  -> sw4 <- AP (x2)   |  |  |  | | --- | --- | --- | | **Item** | **Description** | **Why?** | | ISP business plan | - Plan designed for businesses - 24/7 support - Upgrade or downgrade your contracted internet speed with one click | - Purchase a business internet plan with the most basic recommended configuration, using your own router, and upgrade the ISP plan as needed. - Purchasing a business internet plan is more appropriate for this client, as their expansion plans include using cloud technologies and multiple locations, so no on-premise service would be necessary. - An ISP can easily scale the college's network capacity and speed with the right router. - helps troubleshoot network stability issues | | Switch | - Support for 24 devices - Minimum speed support of 1 Gbps | - Purchasing another switch increases the connection capacity with Wi-Fi modems - To balance the hardware - Increases the number of available connections per network | | Router | - High-volume enterprise device - At least 500 simultaneous sessions - Minimum speed of 5 Gbps - Supports Fiber optic, coaxial, and hybrid technologies - Designed for reliability | - Purchasing a high-capacity business router gives the college network the ability to support a large number of connected devices and simultaneous sessions. - Ability to scale quickly, simply changing the internet plan. - Built-in firewall and packet verification provide additional protection for the college network. | | Wi-Fi Modem | - Supports dual-band 2.5GHz and 5GHz - Supports Wi-Fi 6e - Supports at least 15 devices - Supports a minimum speed of 5Gbps | - They provide Wi-Fi internet coverage - With multiple Wi-Fi modems, you can better balance the network load, with a maximum of 15 devices per device - The network configuration allows for rapid scaling simply by adding more Wi-Fi modems - helps troubleshoot network stability issues | | Cables | - supports at least 1 Gbps  - provides shielded cable  - UTP cat 5e  - UTP cat 6  - UTP cat 6a | - Minimum cabling recommended to avoid interference - Offers good performance - Its cost is relatively low | | Cloud Data Service | X | Not necessary, the college uses office suite software | | Cloud Backup service | - Scheduled backups of all data - Automatic document backups - Backups per user account - File restoration | - Maintains all data - Most cloud providers have automatic backup solutions - Allows for quick recovery of information | | Cloud Users Account | - Individual user accounts - Permissions by roles and groups - Account recovery - Secure connection methods - Data encryption methods - Two-factor login | - Multiple user accounts allow you to apply roles to each one - Data encryption, secure connection, and two-factor login are already included by default | | Cloud Office Suite Licences | - Excel, PowerPoint, and Word online - Automatic backups - Document versioning - Recovery of previous versions - Collaborative work - Offline work | - Allows you to work with cloud office software from anywhere at any time - Documents and information will always be in their latest version by default - Collaborative work is an important feature for the college's expansion plans - Reduces the local load on the device when used over the internet - Technically, it is supported by any device with internet access |   **Vendor And Product Analysis**  Due to the implementation of cloud services includes the entire infrastructure for user management and security, a single table will be displayed with the provider analysis for 1. Modernization of IT Infrastructure and 2. Remote Access.  I've divided the vendors and their products into three categories for the analysis. Each relates to the project's requirements as follows:   |  |  |  |  | | --- | --- | --- | --- | | Requirements / Vendor Analysis | **1. Cloud Services** | **2. ISP-Vendors** | **3. HW-Network-Vendors** | | **1. Modernisation of IT Infrastructure** | Cloud vendors related to infrastructure modernization as well as all user management and security | x | x | | **2. Remote Access** | X | X | | **3. Campus Network Improvement (Wi-Fi and Network)** | x | ISP related to internet service for the improvement of campus internet service | Vendors and products related to hardware for improving the internet network on campus | | **4. Software / Hardware Quality Assurance** | X | X | X | | **5. Documentation and Support** | X | X | X |  * 1. **CLOUD-SERVICES**   **Vendor 1: Google: Google Workspace for Business (Plus)**  [**https://workspace.google.com/pricing.html?source=gafb-lp\_meet-faq-en-AU&hl=en-AU&ga\_region=japac&ga\_country=au&ga\_lang=en**](https://workspace.google.com/pricing.html?source=gafb-lp_meet-faq-en-AU&hl=en-AU&ga_region=japac&ga_country=au&ga_lang=en)  **Vendor 2: Microsoft: Microsoft 365 for Business (Basic) + Office 365 Extra File Storage**  [**https://www.microsoft.com/en-au/microsoft-365/business**](https://www.microsoft.com/en-au/microsoft-365/business)   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **VENDOR** | **Product** | **Licencing** | **Max users** |  |  |  |  |  |  |  |  |  |  | | **Google** | Google Workspace for Business (Plus) | user / month / year | 300 |  |  |  |  |  |  |  |  |  |  | | **Microsoft** | Microsoft 365 for Business (Basic) + Office 365 Extra File Storage | user / month / year | 300 |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | **VENDOR** | **Business Storage** | **User & Rol Scheme** | **Cloud Backup service** | **Cloud Office Suite Licences** | **User Activity and Access Logs** | **Account recovery** | **Secure connection methods** | **Data encryption methods** | **Automatic Backups** | **Document versioning** | **Recovery of previous versions** | **Collaborative work** | **Offline work** | | **Google** | 125TB (5TB/user) | advanced Role-Based Access Control (RBAC) | Google Vault  A third-party solution is needed for daily point-in-time backups | Included full suite web-based applications | Security Centre  investigation tools  security health page | Admin Console | TLS Client-side encryption | Advanced Encryption Standard (AES) Client-side encryption | Google Vault  automatic data redundancy  A third-party tool is needed for point-in-time backups | Automatic | version history | Real-time  multi-user collaboration | offline access | | **Microsoft** | 5TB 1TB (base)+ 0.25TB (0.1TB/user)+ 3.75TB (add-on) | Microsoft Entra ID ( Azure Active Directory)  role-based access control (RBAC) | 30-day retention  Backup service pay-as-you-go service | Access to web and mobile versions of Office apps Word, Excel, PowerPoint | Microsoft 365 Compliance Center  Entra ID audit logs. | Microsoft Entra ID | HTTPS web services  TLS Cliente-server encryption | Data centers: AES-256  In transit: TLS and SSL | OneDrive and SharePoint  automatic data redundancy | Automatic | version history | Real-time co-authoring and simultaneous editing via Office web | NO, browser-based only | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | **VENDOR** | **Price / License per year (25 users)** | **upload speed** | **download speed** | **simultaneous sessions** | **Local Suport** | **International Support** | **Fees for support** | **Quality rewied for other clients** | **Services after sale** | **Trial and demo** | **promotions and discounts** | **Provider recognized in the market** | **Contract Term and Exit Fees** | | **Google** | $5,940 | not capped | not capped | 100 | No   24/7 phone, email, and chat | 24/7 phone, email, and chat | $0 | 99.9% SLA | customer onboarding support, domain verification assistance, licence management | 14-day trial | 30% off for 3 months  16% with one-year commitment  25% firs years with Visa | An office suite that's more than sufficient for cloud-focused businesses.  Great price-to-storage ratio.  Integration with third-party apps is excellent.  More than sufficient for small and medium-sized businesses. | Annual cancellation  No fees | | **Microsoft** | $4,196.5 yr  $3,249 (base) + $937.5 | not capped | not capped | not specified | local Australian Microsoft support centres  business hours by phone | 24/7 phone, email, and chat | Premium Support Plans are optional and billed | 99.9% SLA | feature enhancements | 1-month | 5% with one-year commitment | Aditional service extremly expensive  Very good experience in medium-sized/large companies.  Integration services with Office, windows and Azure are excellent. | Annual cancellation  No fees | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | Google Workspace for Business (Plus) | $5,940 | $2,970 | 6 MONTHS |  |  |  |  |  |  |  |  |  | | **TOTAL COST** | **$2,970** |  |  |  |  |  |  |  |  |  |  |  |  |  * 1. **ISP-Vendors**   **Vendor 1: Tesltra: Business Pro Ultrafast nbn**  [**https://www.telstra.com.au/small-business/internet/nbn#plan**](https://www.telstra.com.au/small-business/internet/nbn#plan)  **Vendor 1: Telstra business nbn Enterprise Ethernet**  [**https://www.telstra.com.au/small-business/internet/nbn-enterprise-ethernet**](https://www.telstra.com.au/small-business/internet/nbn-enterprise-ethernet)  **Vendor 2: Optus: Business nbn Ultimate**  [**https://sales.optus.com.au/business?campaign=businessnbn**](https://sales.optus.com.au/business?campaign=businessnbn)   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **VENDOR** | **Product** | **Contract Terms** | **Price** | **Bandwidth** | **Core Technology Type** | **router compatibility protocols** | **Service Scalability** | **Guaranteed Uptime Percentage** | **Business Support** | **Network Redundancy and Failover Capabilities** | **Trial and demo** | **promotions and discounts** | **Provider recognized in the market** | **Contract Term and Exit Fees** | | **Tesltra** | Business Pro Ultrafast nbn | monthly | $175 | 815 Mbps / 320 Mbps | nbn FTTP HFC | VoIP FTTN FTTB VDSL2 WAN port VLAN Tagging PPPoE/DHCP 1000BaseLX | Upgrade to enterprise plan  Downgrade to smaller business plan | 99.9% | Monday to Friday 8am - 7pm AEST  Call Book an appoiment Multilingual service | Response: 1h  Target: 6h | No | $40 off for 6 months  $240 off over 6 months | Reliable service, fast support  The cost of service is considerably higher | cancel before minimum term ends  No fees | | **Optus** | Business nbn Ultimate | monthly | $159 | 800 Mbps / 320 Mbps | nbn FTTP | DHCP/PPPoE FTTN / FTTB VDSL2 WAN port SRA: SOC / ROC | Upgrade to enterprise plan  Downgrade to smaller business plan | 99.9% | in-person  24/7 phone, webchat | 4h | No | No | Low prices, good service  The service is unreliable  Good speeds  Data breach scandals, cyberattacks, and bad practices tarnish the company's name | cancel before minimum term ends  No fees | | **Telstra** | Telstra business nbn Enterprise Ethernet | 12 / 24 / 36 months | $420 | 1000 Mbps / 1000 Mbps | nbn FTTP | VoIP FTTN FTTB VDSL2 VLAN Tagging PPPoE/DHCP 1000BaseLX | Contact Business support | 99.95% | Monday to Friday 8am - 7pm AEST  Call Book an appoiment Multilingual service | Response: 1h  Target: 6h | No | No | 90% of large businesses use Telstra Enterprise  Reliable service, fast support  The cost of service is considerably higher | 36 month minimum spend agreement charge up to $5,900 | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  | business nbn Enterprise Ethernet | $420 | $2,520 | 6 MOTHS |  |  |  |  |  |  |  |  |  |  | | **TOTAL COST** |  | **$2,520** |  |  |  |  |  |  |  |  |  |  |  |  |  * 1. **HW-Network-Venders**   All internet plans offered by ISPs provide the necessary hardware to connect to the internet, so a router is not necessary.   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **VENDOR - Switch** | **Product** | **Price** | **L2/L3 Managed Capability** | **Port Density & Speed** | **Standards Compliance** | **Backplane / throughput** | **Uplink Ports (SFP/SFP+ / Fibre)** | **VLAN Support & Port Isolation** | **Quality of Service (QoS)** | **Remote Management & Monitoring** | **Enterprise-Grade Security Features** | **Power over Ethernet (PoE/PoE+) Support (if required)** | **Firmware Updates & Long-Term Support** | **Warranty & After-Sales Support** | **Trial or Demo Availability** | **Market Recognition & Reviews** | | **UniFi** | **USW-Pro-48-POE** | $2,349 | Layer 3 Management PoE+ | (40) GbE, 802.3at PoE+ RJ45 ports (8) GbE, 802.3bt PoE++ RJ45 ports (4) 10G SFP+ ports  IEEE 802.1p, RFC 2474, algoritmos WRR/SPQ | CE, FCC, IC  IEEE 802.3ae, IEEE 802.3z, SFP+ MSA  RFC 791, RFC 4293, IEEE 802.1X  ACMA Technical Standards, AS/NZS 3080, AS/NZS ISO/IEC 27001/27002 | Total Non-Blocking Throughput 88 Gbps  Switching Capacity 176 Gbps  Forwarding Rate 130.944 Mpps | (4) 1/10G SFP+ Ethernet Ports | 1000, Access Lists IPv4 MAC | IEEE 802.1p / DSCP / WRR / SPQ | Web UI, SSH, HTTPS API   Real-time, email, syslog export   TLS 1.2+, SSHv2, RBAC, RADIUS/802.1X | 802.1X, MAC Auth Bypass, Guest VLAN DHCP Snooping, DAI, IPSG, BPDU Guard, Port Security VLANs, PVLANs, ACLs HTTPS, SSHv2, RBAC, 2FA Signed updates, rollback Syslog, SNMPv3, Event Alerts | 600w   40 PoE+ 8 PoE++ | No found | 2 years | No | The capabilities of some L3 switch models are not sufficient to qualify as L3.  The network devices are reliable.  Reviews on retail sites are very positive. | | **UniFi** | **USW-Pro-24-POE** | $1,479 | Layer 3 Management PoE+ | (24) 10/100/1000 RJ45 Ports (2) 1/10G SFP+ Ethernet Ports | CE, FCC, IC  IEEE 802.3ae, IEEE 802.3z, SFP+ MSA  RFC 791, RFC 4293, IEEE 802.1X  ACMA Technical Standards, AS/NZS 3080, AS/NZS ISO/IEC 27001/27002 | Total Non-Blocking Throughput 44 Gbps  Switching Capacity 88 Gbps  Forwarding Rate 65.472 Mpps | (2) 1/10G SFP+ Ethernet Ports | 1000, Access Lists IPv4 MAC | IEEE 802.1p, DSCP, WRR, SPQ | Web UI, SSH, HTTPS API   Real-time, email, syslog export   TLS 1.2+, SSHv2, RBAC, RADIUS/802.1X | 802.1X, MAC Auth Bypass, Guest VLAN DHCP Snooping, DAI, IPSG, BPDU Guard, Port Security VLANs, PVLANs, ACLs HTTPS, SSHv2, RBAC, 2FA Signed updates, rollback Syslog, SNMPv3, Event Alerts | 600w   16 PoE+ 8 PoE++ | No found | 2 years | No | The capabilities of some L3 switch models are not sufficient to qualify as L3.  The network devices are reliable.  Reviews on retail sites are very positive. | | **Cisco** | **Cisco Business 350 Series CBS350-24S-4G** | $1,765.61 | L3 managed | 24 x Gigabit SFP + 2 x Combo Gigabit Ethernet/Gigabit SFP + 2 x Gigabit SFP (Uplink) | ISO 14001, ISO 9001, RoHS, REACH, CE, FCC  IEEE 802.3ab, 802.3z, 802.3ae, SFP/SFP+ MSA  IEEE 802.1X, IEEE 802.1D/802.1Q, RFC 4293   RFC 791, RFC 4293 RFC 2131, RFC 3118  ACMA Technical Standards, AS/NZS 3080, AS/CA S009, AS/NZS ISO/IEC 27001/27002, AS/CA S008 | Switching Capacity  6 Gbps  Forwarding Rate 41.66 Mpps | 2 x Gigabit Ethernet combo + 2 SFP | 256 | 802.1X Control  MAC-Based ACLs & Device Isolation  IP-Based ACLs & Network Isolation  DHCP Snooping & Guarding  MAC Address Blocking  MAC-Based Port Restriction | Cisco Business Dashboard and mobile app; on-device UI, CLI, and SNMP | 802.1X authentication, ACLs, DoS protection, MAC-based access control, SNMPv3 | NO | End of Support Life: October 31, 2029 | 1 year, Enhanced limited lifetime warranty | No | Reputation and market recognition  At the forefront of technology  Specialized technical support  Long-lasting products  More expensive than other options on the market | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | **VENDOR - Access Point** | **Product** | **Price** | **Wi-Fi Standard & Radio Specs** | **Maximum Concurrent Clients / Session Capacity** | **Throughput / Data Rate** | **Multiple SSID & VLAN Mapping** | **Security & Authentication** | **QoS & Traffic Management** | **PoE Support** | **Remote Management & Monitoring** | **Firmware Updates & Patch Support** | **Scalability & Roaming Support** | **Warranty & After-Sales Business Support** | **Trial or Demo Availability** | **Market Recognition & Client Reviews** | **Standards** | | **TP-Link Omada** | **tp link omada ax3000** | $199 | Wi-Fi 6 (802.11ax), Dual-Band: 2.4 GHz (574 Mbps), 5 GHz (2402 Mbps) | 256 | Total 2976 Mbps (574 Mbps on 2.4 GHz + 2402 Mbps on 5 GHz) | Supports up to 16 SSIDs, VLAN tagging, and seamless roaming | WPA3, WPA2, WPA, 802.1X RADIUS, PPSK, MAC filtering, HTTPS management | OFDMA, MU-MIMO, Airtime Fairness, Band Steering, Load Balancing | 802.3bt PoE++ | Omada SDN Cloud Controller, Omada App, Web UI | Automatic updates | scalable deployment | 5 years | No | The software often crashes and requires constant reboots to recognize devices. User rating: Good | IEEE 802.11ax, 802.11ac/n, 802.11v/k/r, IEEE 802.1X, IEEE 802.1Q, WPA3/2/1, HTTPS/TLS  AS/NZS ISO/IEC 27001/27002, AS/CA S008, ACMA Technical Standards  IEEE 802.3bt, 802.3af/at, 802.3ab/z/ae, SFP/SFP+ MSA  IEEE 802.1X, 802.1D/1Q, RFC 2131/3118, RFC 4293, TLS/HTTPS | | **NETGEAR** | **netgear wax630e** | $99 | Wi-Fi 6E (802.11ax), Tri-Band: 2.4 GHz (600 Mbps), 5 GHz (4800 Mbps), 6 GHz (2400 Mbps) | 512 | Total 7800 Mbps (600 Mbps on 2.4 GHz + 4800 Mbps on 5 GHz + 2400 Mbps on 6 GHz) | Supports up to 8 SSIDs, VLAN tagging, and seamless roaming | WPA3, WPA2, WPA, 802.1X RADIUS, MAC filtering, HTTPS management | OFDMA, MU-MIMO, Airtime Fairness, Band Steering, Load Balancing | 802.3bt PoE++ | NETGEAR Insight Cloud Management, Web UI | Automatic updates | scalable deployment | 5 years | No | Resistant to environmental conditions  Good performance  Reliable devices  Some users report software bugs | IEEE 802.11ax, 802.11ac/n, 802.11v/k/r, IEEE 802.1X, IEEE 802.1Q, WPA3/2/1, HTTPS/TLS  AS/NZS ISO/IEC 27001/27002, AS/CA S008, ACMA Technical Standards  IEEE 802.3bt, 802.3af/at, 802.3ab/z/ae, SFP/SFP+ MSA  IEEE 802.1X, 802.1D/1Q, RFC 2131/3118, RFC 4293, TLS/HTTPS | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | **VENDOR - Cables** | **Product** | **Price** | **Cuantity** | **Cable Category** | **Shielding Type** | **PoE Compatibility** | **Gigabit Ethernet & Backward Compatibility** | **Material** | **Connector** | **Installation & Certification Standards** | **Patch Panels & Terminations** | **Environmental & Fire Rating** | **Warranty & Vendor Certification** | **Trial or Demo Segment** | **Market Recognition & Quality Reviews** | **Standards** | | **4cabling** | **CAT6A S/FTP Cable on Reel w/ PVC Jacket | 305m Roll Blue** | $1,496.00 | 1200m | Cat 6A S/FTP | FTP | 100w | 10Gbps | 26AWG x 4Pair, 100% Bare Copper | Strong and robust male-to-male RJ45 connectors  LSZH RJ45-RJ45 | ETL Verified UL Verified Performs at 500MHz ISO/IEC11801:2011(Ed. 2.2) ANSI/TIA/EIA-568-C.2 Category 6A compliant EN 50173-1:2011 EN 50173-2:2007 including amendment A1:2010 IEC61935-2:2010(Ed.3.0) (transmission requirements) | No data | Low Smoke Zero Halogen (LSZH) reduces the amount of corrosive and toxic gases emitted during comb | 3 years | No | Very good user rating  Good value for money  100% Australian company  Many users gave poor ratings due to logistics-related issues. | ISO/IEC 11801:2011, ANSI/TIA/EIA-568-C.2 Cat 6A, EN 50173-1/2, IEC 61935-2  AS/NZS ISO/IEC 11801, AS/NZS 3080, AS/CA S009 | | **4cabling** | **4cabling CAT 5e** | $1,316.00 | 1000m | 5e | UTP | No data PoE | 1000Mbps | 24AWG x 4Pair, 100% Bare Copper | PVC  RJ45-RJ45 | ETL, UL Verification Flame test: comply with IEC 60332-1-2 ISO/IEC11801:2011(Ed. 2.2) ANSI/TIA/EIA-568-C.2 EN 50173-1:2011 EN 50173-2:2007 including amendment A1:2010 IEC61935-2:2010(Ed.3.0) (transmission requirements) | Gold Plated Contacts | Flame Retardant PVC | 3 years | No | Very good user rating  Good value for money  100% Australian company  Many users gave poor ratings due to logistics-related issues. | ISO/IEC 11801:2011, ANSI/TIA/EIA-568-C.2 Cat 6A, EN 50173-1/2, IEC 61935-2  AS/NZS ISO/IEC 11801, AS/NZS 3080, AS/CA S009 | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  | Counting |  |  |  |  |  |  |  |  |  |  |  |  |  | | switch L2 x2 - 24 | USW-Pro-24-POE | $ 1,479.00 | 2 | $ 2,958.00 |  |  |  |  |  |  |  |  |  |  |  |  | | switch L2 x1 - 48 | USW-Pro-48-POE | $ 2,349.00 | 1 | $ 2,349.00 |  |  |  |  |  |  |  |  |  |  |  |  | | AP x 4 | netgear wax630e | $ 99.00 | 4 | $ 396.00 |  |  |  |  |  |  |  |  |  |  |  |  | | cable CAT 6a pack x300m | CAT6A S/FTP Cable on Reel w/ PVC Jacket | 305m Roll Blue | $ 1,496.00 | 1 | $ 1,496.00 |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | **TOTAL COST** |  | **$ 7,199.00** |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | |
| Interdependencies  *In terms of the products and equipment you have identified, identify and describe any interdependencies i.e. does the product/equipment only work with specific software.* |  | |
| Availability of products/equipment  *In terms of the products and equipment you have identified, indicate their availability.* | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Product/Service** | **Counting** | **delivery time** | **Price** | **fees** | **Website** | | **Google Workspace for Business (Plus)** | x1 | pay and use | $2,970 | $0.0 | <https://workspace.google.com/pricing.html?source=gafb-lp_meet-faq-en-AU&hl=en-AU&ga_region=japac&ga_country=au&ga_lang=en> | | **Telstra business nbn Enterprise Ethernet** | x1 | pay and use | $2,520 | $0.0 | <https://www.telstra.com.au/small-business/internet/nbn-enterprise-ethernet> | | **USW-Pro-48-POE** | x1 | 2–3 business days | $2,349 | $17.0 | <https://www.scorptec.com.au/product/networking/switches/80121-usw-pro-24-poe> | | **USW-Pro-24-POE** | x2 | 2–3 business days | $1,479 | $17.0 | <https://www.scorptec.com.au/product/networking/switches/80121-usw-pro-24-poe> | | **netgear wax630e** | x4 | 1–2 business days | $99 | $0.0 | <https://www.lmc.com.au/netgear-wax630e-ax7800-tri-band-access-point-wifi-6e-wax630e-100aus?srsltid=AfmBOopd9eCrZZd-9rv0qvRjzSjDf1SswzhmKCbhl0kWX2Z5hLCojeZP> | | **CAT6A S/FTP Cable on Reel w/ PVC Jacket | 305m Roll Blue** | x4 | Store Pickup | $1,496.00 | $0.0 | [https://www.4cabling.com.au/cat-6a-s-ftp-cable-roll-305m-w-pvc-jacket-on-reel-blue.html#](https://www.4cabling.com.au/cat-6a-s-ftp-cable-roll-305m-w-pvc-jacket-on-reel-blue.html) | |  |  |  |  |  |  | |  |  |  |  |  |  | | **TOTAL COST** |  |  | $10,913.0 | $34.0 |  | |  |  |  |  |  | |  |  | **$10,947.0** | |  | |  |  |  | | |
| Standards  *For each of the products/equipment you have identified, identify the Standard that applies to the product/equipment.* | **USW-Pro-48-POE and USW-Pro-24-POE**  CE, FCC, IC  IEEE 802.3ae, IEEE 802.3z, SFP+ MSA  RFC 791, RFC 4293, IEEE 802.1X  ACMA Technical Standards, AS/NZS 3080, AS/NZS ISO/IEC 27001/27002  **Cisco Business 350 Series CBS350-24S-4G**  ISO 14001, ISO 9001, RoHS, REACH, CE, FCC  IEEE 802.3ab, 802.3z, 802.3ae, SFP/SFP+ MSA  IEEE 802.1X, IEEE 802.1D/802.1Q, RFC 4293   RFC 791, RFC 4293 RFC 2131, RFC 3118  ACMA Technical Standards, AS/NZS 3080, AS/CA S009, AS/NZS ISO/IEC 27001/27002, AS/CA S008  **TP-Link Omada**  IEEE 802.11ax, 802.11ac/n, 802.11v/k/r, IEEE 802.1X, IEEE 802.1Q, WPA3/2/1, HTTPS/TLS  AS/NZS ISO/IEC 27001/27002, AS/CA S008, ACMA Technical Standards  IEEE 802.3bt, 802.3af/at, 802.3ab/z/ae, SFP/SFP+ MSA  IEEE 802.1X, 802.1D/1Q, RFC 2131/3118, RFC 4293, TLS/HTTPS  **netgear wax630e**  IEEE 802.11ax, 802.11ac/n, 802.11v/k/r, IEEE 802.1X, IEEE 802.1Q, WPA3/2/1, HTTPS/TLS  AS/NZS ISO/IEC 27001/27002, AS/CA S008, ACMA Technical Standards  IEEE 802.3bt, 802.3af/at, 802.3ab/z/ae, SFP/SFP+ MSA  IEEE 802.1X, 802.1D/1Q, RFC 2131/3118, RFC 4293, TLS/HTTPS  **CAT6A S/FTP Cable on Reel w/ PVC Jacket | 305m Roll Blue and 4cabling CAT 5e**  ISO/IEC 11801:2011, ANSI/TIA/EIA-568-C.2 Cat 6A, EN 50173-1/2, IEC 61935-2  AS/NZS ISO/IEC 11801, AS/NZS 3080, AS/CA S009 | |
| Testing  *Describe the testing procedure for testing the products/equipment.*  *Describe how the test procedure is both valid and reliable.*  *Include results of the tests you have undertook. This can be screenshots, for example, and will be specific to the product/equipment you have chosen.* |  | |
| Additional testing  *If the initial tests you undertook were inconclusive or where it appears another product may be more appropriate, describe revised testing you undertook. If this situation did not occur describe what you would do in this situation.* |  | |
| Cost-benefit analysis  *Based on your research and testing to date, summarise how each of the vendor products/equipment you have reviewed rate regarding:*  *their quality*  *their performance*  *support offered by the vendor*  *benefits and limitations*  *integration capabilities*  *Discuss the fit between the vendor products/equipment and the client’s needs.* | * + 1. **Cloud service: Google**   For a company of this size (25 employees), the business options on the market are sufficient. Meanwhile, the industry has regulated security and advanced encryption methods, so both companies offer similar solutions.  On the other hand, the TB ratio per price is very different. Google offers more affordable prices, while Microsoft's prices are excessively high. Although the Office suite is important for the college, the Google suite is more than sufficient. When the college grows in size, it should choose a corporate CMR product like CMR.  The storage and user management features offered by Google cover the college's needs. Microsoft's equivalent option with similar capabilities to Google's costs 5 times more, so it's not a smart choice.  So, Google Workspace is the best option.   * + 1. ISP   Despite its high cost, Telstra's rating as a company is very positive. Data security and infrastructure stability are critical to the college's operations. The network's symmetry and speed are more than sufficient to support the college's current operations and its medium-term expansion plans.  The ease of upgrading/downgrading the contracted plan offers flexibility in its service.   * + 1. Hardware Network   The selected components meet the technical requirements to operate in conjunction. The most critical are:  - QoS  - VLANs  - Bandwidth  - PoE  In addition, the nodes will communicate on 10G ports to avoid bottlenecks.  The network is designed to easily scale to 10G speeds and thousands of connected devices. The cost of CAT 6a cable is a good investment for the school's expansion plans. | |
| Recommendations  *Based on the cost-benefit analysis you have completed, provide your recommendation on which products/equipment you believe is most suitable for the business and why.* |  | |
| *Paperclip* Attach: | Screenshots |  |