((•racked Solutions

'Project Acension'
ICT Network Proposal for Smart Company

Recipient:	SMART Company

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3. Introduction

Technology has irrevocably transformed the modern business world, allowing organisations to expand and connect with new clients, branches, and prospects. The limitless opportunities for change allow companies to retain a competitive advantage against the current market, improving outreach to clients and the quality of services that they can provide. Information and Communications Technology (ICT) solutions that unify and optimise corporate branches and operations offer businesses a clear competitive advantage by saving time and resources, while boosting customer service and business decisions. The organisation and simplification of business tasks can improve employee satisfaction and productivity by enhancing synergy across firm branches and procedures. The implementation of a robust, comprehensive ICT system can support a company's continuous growth in terms of profit, scale, and market relevance, bolstering the prosperity of a business.

The success of Smart Company can be traced to its reputation as a 'reliable, experienced and flexible' provider of professional advertising services to small businesses, offering high-quality strategies and campaigns. Cracked Solutions believes an innovative and robust information system solution that leverages 'Cloud-computing' computing trends will greatly improve the collaboration and efficiency of your brand, rectifying the company's long-term viability as a competitor in today's digital market, whilst stimulating new sales and strategy possibilities.

The purpose of the following report is to propose an innovative ICT solution through the comprehensive analysis of each in order to demonstrate the value of the solution system and acquire project approval from Smart Company. In the sections to follow, Cracked Solutions presents a simultaneous analysis of the present networking systems and a proposal of the solution system. Information gathered about the current office environment has been garnered from the supplied interview and company files, as well as information obtained from academic and industry resources.

The proposal of our ICT solution is divided into multiple sections, each with a number of segments, targeting a particular upgrade to your system:
- **Networking:** Aims to enhance both the hardware and software which Smart Company currently utilises to complete tasks in their work, focusing on providing rapid and the unification of offices through Microsoft 365.

- **Workstations:** Recommendations of required devices and accessories for office workstations, while focusing on options that support mobility through technologies that support your hybrid work model.
- **Conferencing:** The conferencing section delves into our solution to bolster the connection between your offices, as well as with your clients. Consideration of each office's meeting room environment.
- **Security:** Security is critical to ensure to robustness and trust between both team members and clients, through both of both internal and external security measures.
- **Marketing:** Finally, emerging technologies have provided great opportunity for new ways to build client outreach and digital presence. This section focuses on changes that can inform and promote Smart Company's brand, concretising your company in an increasingly digital world.

Finally, the conclusion summarises the advantages of our network solution to your business, and discusses the future design and implementation activities following the acceptance of the solution system. Further, to encompass the proposed system, the project title 'Ascension' incorporates our focus on a 'cloud-based' solution to emphasise the elevation that our proposed system will offer.

4. Our Background

4.1 Name

Cracked Solutions

4.2 History

We are a group of recently graduated individuals from the University of Wollongong, each having obtained a Bachelor of Computer Science, founding Cracked Solutions almost six months ago. Our organisation is comprised of four members; Thomas, Jade, Arnav, and Alwin, who each have a passion for all things technology. For as long as we can remember, we have been fascinated with the digital aspect of the world we live in, and how this is constantly changing in light of new and upcoming technologies. Our organisation's background couples well with this, as our young and contemporary view on networking has the ability to develop innovative and inventive solutions that would not normally be considered in traditional ICT solutions.

4.3 Mission

Cracked Solutions as an organisation aims to implement the best possible Information and Communication Technology (ICT) solutions to all of our clients, allowing them to benefit as businesses in the long term with new and innovative developments. We achieve this through thoroughly constructing physical and logical plans that focus on efficiency and results within the workplace based on products and devices that improve the technological aspect of a company, as we believe technology is the future of our increasingly digitalised world.

4.4 Vision

In terms of our focus on your company's proposition, we plan to completely renovate the technological side of things in the Smart Company work environment. This will be based around networking, workstations, conferencing, security, and marketing, that will each contribute to a more productive and effective workplace for all employees to benefit from and experience positive results.

Specifically, we will concentrate on a leveraging the Internet and Microsoft 365 to unify your offices. Alongside this, each employee will be provided with a personal laptop they can take home, while also working well with a monitor and device dock in the office, together with a mobile phone and plan for communication. Due to the development of your new Liverpool office, we will revamp the main meeting rooms in each office to focus around a projector for presentations and conferences. The security will be highly improved with changes being made to the network to protect your company for not only external malware risks, but also potential threats from within your company through monitoring. Finally, an emphasis will be placed on marketing specific to Smart Company's goals and aspirations with improvements to your printing system, as well as your online presence in the World Wide Web.

Overall, we are confident these advancements will lead to endless success in the best interest of your company, thus eliminating the possibility of falling behind competitors and assisting your clients in the best way possible.

4.5 Previous Work

Due to our background as University graduates, we have not yet had the opportunity to professionally undergo an in-depth technological project for a company. However, each of us have participated in various internship programs in the networking field during our full-time studies. These great opportunities have enhanced our knowledge and understanding of networking solutions in the workplace, as well as provided us with the ability to work as part of a team. In turn, these experiences make us an excellent candidate to improve your company's office environment, which is why we are so excited to showcase what we have to offer your company.

The ICT Solution

5. Networking

In the ICT domain, networking refers to the connection of computing devices and computing equipment for the purpose of transporting and exchanging data between them. A device can be a computer, printer, or any other device capable of sending and/or receiving data generated by other devices on the network.

The scope of the number of computing devices and equipment that are connected result in two main classifications of different networks:

- Local Area Network (LAN), referring to networks that are small in geographical size spanning a room, floor, or building. This level of network is applicable to the interconnection of company devices in the Wollongong and Liverpool SMART Company offices.
- Wide Area Network (WAN), referring to a network that encompasses devices across a state, country, and globally.

One significant instance of a WAN is the Internet. The Internet refers to a global network that connects computing devices. The inception of the Internet is dated to 1960, with the creation of the first working model called ARPANET (Advanced Research Projects Agency). It allowed multiple computers to work on a single network. Note, the difference between the World Wide Web (WWW) and the Internet is that the World Wide Web is a subset of the Internet which stores and allows web documents to be accessed. Contrastingly, the Internet is the network connecting devices that the web transfers the files on. To analogise, the Internet are like roads, connecting regions around the world, whereas the WWW manages the data, such as cars and other vehicles, that are transmitted along the roads.

Therefore, there must be a way to connect computing devices to the Internet to access the WWW and other 'vehicles' that are offered by other computer systems. A modem is a hardware network component that allows a device, or the devices connected to another component such as a router, to connect to the Internet through an Internet Service Provider (ISP). An Internet Service Provider is a company that provides the services and often devices for connecting clients to the Internet. The modem allows networks to send (modulate) and receive (demodulate) digital information from the Internet. Modulation is the process of

converting data a computer is attempting to transmit into waves that can be carried across the Internet, by changing the wave according to the data that is being sent.

As named in the above segment, a router is another hardware network component that allows all of the devices within a LAN region to connect to a central access point. This is generally achieved by connecting each device to the router with cables (wired), or wirelessly (Wireless LAN – or WLAN) by each of your employee's connecting to the Wi-Fi. Wireless Fidelity (Wi-Fi) refers to a family of protocols maintained by the Institute of Electrical and Electronics Engineers (IEEE) that enables devices to connect with a wireless router.

The router is then connected to the modem, allowing each of the devices connected to the LAN to communicate with the Internet. This can be executed with a specialised cable known as an Ethernet cable (wired), or increasingly common, wirelessly.

Other Related Terms:
- **Bandwidth:** The maximum amount of data transmitted over an internet connection in a given amount of time.
- **Broadband:** A transmission medium with enough bandwidth to transmit several connections, thus supplying a high data-rate connection to the Internet. The National Broadband Network (NBN) is an Australian-wide network that utilises this technology to supply fast Internet connection through fibre optic cables (see 7.security pg. 42).
- **Internet Protocol (IP Address):** The Internet Protocol (IP) is a set of rules for devices to communicate over the Internet, as mentioned in previous segment. An IP address is a unique address that identifies a specific device or network, typically an IP address assigned to your router.
- **Static IP Address:** A Static IP address is a fixed address that is assigned to a device by an Internet Service Provider (ISP). These IP addresses do not change, which means that other devices will be able to find and connect to the device, particularly important for the VPN, elaborated in the security section.

5.1 Hardware

Currently, as outlined in your specifications page, SMART Company has Category 5 Unshielded Twisted Pair (UTP) Cabling. This cabling refers to a number of copper wire pairs, generally 4 pairs, twisted in a plastic insulating cover. The primary disadvantage of this cabling is the inconvenience of cabling in the office's appearance, the great chance for interference if devices in the office produce an electromagnetic field, and thus a susceptibility to security risks. Generally, it is selected on enterprise premises due to its lowered cost. However, through our research we have deciphered that your company would hugely benefit from the use of wireless technologies, combined with the replacement of physical servers with Cloud-based services offered by Microsoft 365. These decisions are central to our solution, and will offer your company a competitive advantage in the connected modern landscape.

5.1.1 Internet

5.1.1.1 Modem and router

Draytek Vigor2866Vac

The Draytek 2866Vac Modem/Router combines the Modem and Router into one device. It supports wireless LAN, allowing employee devices to connect without wiring in your office, greatly reducing cost and supporting versatility in your business' growth. Additionally, it supports the configuration of a VPN for your employees. This feature assists in enhancing the security of data that employees transmit over the audio. The device also supports VoIP, a protocol (rule for transmitting information) which supports the transfer of audio.

Figure 1: Draytek vigor router (draytek, 2022)

Other features:

- **Wireless LAN (WLAN) :** Connect employee's computers and mobile phones, and office printers with ease and minimal physical action or disruption, through the use of wi-fi.
  - **IEEE 802.11ac Standard** (Wi-fi)

- **Wireless WAN:** During Internet outages, the router can connect to a personal hotspot set up on mobile phones, and the devices connected to the router's LAN will continue to have access to the Internet through the cellular data connection. This offers greater robustness to our solution, supported by our recommendation of a mobile phone cellular with 10 GB of data per phone. Hence, in the rare case of an outage, access to Microsoft 365 services will be retained.
- **Maximum Bandwidth:** 80 MHz
- **Fibre-like speed up to 1 Gbps:** Depending on the Internet plan SMART Company selects, this router can support a download speed of up to 1 gbps.
- **Virtual Private Network (VPN):** Build a secure and private tunnel from the LAN of Vigor2866Vac to remote workers and the Liverpool office.
    - SSL VPN: Firewalls providing secure remote access through the VPN
- **Firewall:** Filter web pages by URL keyword or web category to block your employees from access to insecure contents
- content filtering
- **Bandwidth management:** Bandwidth limit policy to prevent one workstation device consuming all of the bandwidth in your office, causing disrupted Internet for other devices.
- **Load balancing:** Maximize throughput and reliability by using multiple Internet connections.

Installation:

The Draytek Vigor2866Vac can be ordered from Computer Alliance with a seven-day delivery to both the Wollongong and Liverpool offices at $12. This means that the router and modem for both offices would be successfully complete within the six-week instalment period. Further, it is in suitable time with the one-to-five-day estimation of the Internet Service Provider installation, therefore the Internet for the offices can be set up rapidly. In the following 'Internet Service Provider' section, the incorporation of the modem and router into one device offers flexibility with the Liverpool office incase Fibre to the Premises is not offered.

In relation to configuration, we suggest hiring a modem/router technician to conduct correct and accurate set-up. Given that these personnel have experience and expertise in accessing the correct options, the "average modem and router installation takes about 30 minutes." (Fido 2022) Specifically, the DrayTek router supports the following configuration options:

hide SSID (meaning that users will have to know the name of the network to connect, increasing security), enable security (802.11ac standards), and access control (allowing you to specify the specific corporation devices that can access the network). Modem configuration involves actions such as managing each of the device ports, such as connection to the Internet Service Provider Network Termination Device (NTD), and the port to connect to the router (LAN). Therefore, to configure both modem/routers, an hour of work is estimated.

Warranty: The router/modem is supplied with a two-year manufacturer warranty. Although we understand that this is a year less than the three-to-five-year warranty that SMART Company described, the Computer Alliance company can be contacted to organise other arrangements.

Pricing Summary: Draytek Vigor2866Vac

Initial Costs:
- **Installation Cost:**
    - Delivery Fees:
        - Delivery to the Wollongong office (postcode 2500): $12.00
        - Delivery to the Liverpool office (postcode 2170): $12.00
        - Total delivery fees: $24.00
    - Personnel Fees:
        - Network Technician (1 hour for configuration of both modem/routers): $150
- **Product Costs:**
    - Individual product: $849.00
    - Total product fees (one for the Wollongong and Liverpool office): $1698.00
- **Total Initial cost:** $2847.00

Maintenance Costs:
- **Total Recurring cost:** -

Total cost: $2847.00

Aussie Broadband:

We suggest choosing Aussie Broadband as your ISP, with the Draytek Vigor2866Vac modem/router mentioned above to wirelessly connect the laptops and mobile phones in the office to the Internet.

Plans:

Essential nbn:

This package offers 100/40 Mbps, with a typical busy speed of 97 Mbps. It is at a cost of $119.00 per month.

Advanced nbn:

This package offers 250/100 Mbps, with a typical busy speed of 244 Mbps. It is at a cost of 219.00 per month.

Evaluation

Through evaluation, the Advanced nbn plan is our recommended Internet option with Aussie broadband. This package offers 250/100 Mbps, with a typical busy speed of 244 Mbps.

Installation:

Fibre To The Premises (FTTP) is use of fibre optic cable to deliver Internet access directly to your premise, or office, from an Internet service provider (ISP). Namely, our suggested ISP Aussie Broadband supports this transmission method to both your Wollongong and Liverpool offices. As your property is eligible for FTTP, NBN Co will install a utility box on an outside wall. You'll also have a network termination device (NTD) installed indoors, and a power supply. All of this equipment is included in the cost for their plans.

- **Liverpool:** Fibre to the premises (FTTP)
- **Wollongong:** Fibre to the premises (FTTP)

As your Wollongong and Liverpool offices both indicate that there is an existing connection to the premises (Fibre to the premises), the standard time frame for installation is 1-5 business days and there will be no additional work required by a technician. Given your time frame of 6 weeks for instalment, this would align with the schedule of your company. A Network Termination Device (NTD) is a box that is installed by the ISP, connecting your LAN

network (router) to the Australian National Broadband Network (NBN). As mentioned, the Australian NBN uses fibre optic cables to deliver the Internet. For installation on premises that are already connected to the ISP via FTTP (Fibre to the Premises), another port on the already installed network termination device will be activated, so there will be minimal downtime and interruptions for either branch.

In the Wollongong office, this modem/router can be connected via a cable known as an Ethernet cable to the Network Termination Device (NTD), replacing the current modem featured in the Figure 2 of your specifications. In the Liverpool office, we assume that an NTD device is also available as per the FTTP NBN records. If not however, or if the current network configuration changes, the modem/router offers versatility to your solution.

Warranty:

Not applicable.

Pricing Summary: Aussie Broadband Advanced nbn

Initial Costs:
- **Installation Cost:**
  - Delivery Fees:
    - Included in the plan.
  - Personnel Fees:
    - Included in the plan.
- **Product Costs:**
  - Individual product:
    - Network Termination Device (NTD) included in the plan.
- **Total Initial cost:** -

Maintenance Costs:
- **Total Recurring cost:**
  - Advanced nbn plan for 1 month: $209.00
  - Advanced nbn plan for 2 years: $5016.00
  - Advanced nbn plan for Wollongong and Liverpool offices: $10032.00

Total cost: $10032.00

5.2 Software

5.2.1 Microsoft 365

Microsoft 365 offers a suite of apps that unify and elevate a business' operation, including applications such as document processors, secure and collaborative online file storage, and email and communications management. Microsoft 365 is central to the solution that we propose for SMART company. It will seamlessly link the Wollongong and Liverpool offices, as well as significantly improve productivity and morale of the employees at SMART Company thus boosting the professionalism and quality of your marketing agency. Further, employees will already feel familiar with the Microsoft suite as Microsoft Office 2016 (Professional Edition) is installed on your current workplace computers. With Microsoft 365, we are confident that your employees will be able to achieve higher quality advertising material, innovate further, and nurture a passion in their digital work that will exceed your clients' requirements.

5.2.1.1 Microsoft 365 Applications

5.2.1.1.1 Microsoft Teams

Microsoft Teams is central to our solution for communication in organisation, unifying the Wollongong and Liverpool offices, facilitating seamless remote work, and providing a workspace for communication, meetings, file, and app sharing. In relation to your hybrid working workplace, its online messaging application will allow your employees to retain the same levels of efficiency regardless location, boosting employee productivity and morale. This organisation will cascade into your clients, improving preparation, organisation and trust.

Microsoft Teams offers a chat function with instant messaging in-text and within documents that will allow your employees to stay connected. It also offers a 'teams and channel' framework, which will allow groups of staff working together to focus on a particular advertising project. For example, SMART Company can create text channel channel that facilitates collaboration between a marketing consultant and a graphic designer. This channel can help in organising where work is located, especially enabled through the compatibility of other Microsoft 365 apps such as Microsoft Word and Microsoft Powerpoint with Teams. Teams also offers file storage within SharePoint integration (view 4.2.1.1.3 Sharepoint). Further, Microsoft Teams offers version control services, allowing employees to view who has created, updated, and removed recent business files, facilitating teamwork and confidence between your employees. This is integral to your solution as it allows SMART

Company to manage communications between Wollongong and Liverpool through even faster methods than email.

Microsoft Teams also offers online video conferencing. This greatly benefits your company as it allows client meetings to be held online whilst retaining the value of face-to-face interactions, enhancing the professionalism and connections built by your brand. On an internal level, this will allow the Wollongong and Liverpool offices to stay connected to a high degree, and remote workers to utilise features such as 'changing video backgrounds' to retain productivity and professionalism. Teams also offers audio conferencing which is similar to phone calls but allows employees to call from multiple different devices, such as their laptop or phones and is conducted over the Internet which can offer greater convenience than video calls. Microsoft Teams also allows meetings to be scheduled in advanced, and tracked through the Outlook calendar. Outlook is also included in Microsoft 365 packages, elaborated in the below sections. It is imperative that SMART Company integrates Microsoft 365 to retain their business values as 'reliable, experienced and flexible'. Microsoft teams also offers security and privacy to your business, as well as transparency. This is elaborated on in the Security report component. Meetings, conferences, documents, and messages are all encrypted before transmission, allowing your company to be confident in your confidentiality.

Its flexibility as a mobile app, web application and desktop application offer employees a high degree of employee. Additionally, the ability to host smarter meetings with clients offer transparency and greater trust with your clientele. These features result in improved collaboration and streamline communications, offering 'reliability and flexibility' to your internal organisation ultimately enhancing your client impression.

5.2.1.1.2 OneDrive

OneDrive is an Internet, or 'cloud-based', storage space, offering unlimited file access at any time, free up device storage, and shareable content across teams. With OneDrive, employees can control over who can view, download, and edit their files. This is central to unifying the Wollongong and Liverpool offices, as your employees can seamlessly access business resources without connecting to a Virtual Machine or a manual storage device such as a Universal Serial Bus (USB). Another benefit of OneDrive is that it can integrate with the Windows 10 Operating System (OS), allowing file management in File Explorer to feel seamless. This allows for easy organisation of data and confidence in knowing that the data

on the platform is secure from outside threats as well as hard drive malfunction, as files are stored in the Microsoft 'Cloud'.

5.2.1.1.3 SharePoint

SharePoint is also a 'cloud based' storage space. However, whereas OneDrive was designed for storage of more personal files, SharePoint focuses on team collaboration. SharePoint contains security controls, co-authoring, versioning, as well as greater integration with Microsoft Exchange and Microsoft Teams. For instance, my default the leader of a Microsoft Team can control access for other members. Additionally, SharePoint offers a 'customised views' tool where your employees can alter the organisation of their files. SharePoint offers tools such as requiring an approval on documents before an employee can access them, a 'check out' feature on documents so that users can't make edits without authorisation, notifications when documents are changed and automated actions such as moving or emailing. With SharePoint, SMART Company can be more organised, secure, and transparent with shared company data.

5.2.1.1.4 Outlook

Microsoft Outlook is a software program that acts as an email client, offering related services such as email management, an address book, and a calendar where employees can schedule meetings in conjunction with Microsoft Teams. For SMART Company, the Outlook calendar function specifically allows employees to see what co-workers have planned, providing greater levels of transparency and communication between employees and potentially clients at SMART Company.

5.2.1.1.5 Exchange

Microsoft Exchange is similar to the email client offered by Microsoft Outlook, However, Exchange offers a higher quality of services when it comes to security, data protection and cloud operated technology, due to its target toward enterprise and business users. This offers options such as that users can access data and past messages on group projects, dedicated storage space of to up to 1TB of data storage space per user, and paired with our recommendation of Microsoft Defender for Business, eliminate email threats before they reach the inbox. It also centralises an employee's corporate and client contacts into one place, with considerations such as avoiding data duplication and redundant contact information for multiple workers in your corporate network.

Features:
- Email management

- Integrated with Microsoft Defender for Business, antiphishing (filter emails pretending to be from reputable sources to trick employees into revealing personal information), antispam, antimalware and spoof intelligence (verify the identity of users sending emails)
- Calendar organisation, including collaborative features such as meeting invites, shared calendars, and bookable slots
- Contact management providing an organisation-wide address book
- Collaborative task management, such as the ability to delegate tasks to another user

5.2.1.1.6 Word

Microsoft Word is a text processing software application, allowing users to create professional-level documents through advanced features to manipulate text and images. In relation to SMART Company, text processors are imperative for a marketing agency, allowing your graphic designers to document the design process, present portfolios and advertising proposals, and manipulate important administration software. Word can save files as a PDF format, imperative to showcase your design to clients through emailed documents. It also offers a range of grammatical error correction tools, such as automatic spell and punctuation checks, increasing your employee's productivity, and aesthetic tools such as document templates. For SMART Company, this will allow employees to efficiently produce and present professional content to clients. Similar to other document creation applications, like Microsoft Excel and Microsoft PowerPoint, the combination with SharePoint to allow teams of employees to collaborate on the same design is invaluable to elevating your business.

5.2.1.1.7 Excel

Microsoft Excel allows business to improve their data management through the sorting, analysis and manipulation of data in spreadsheets. Your company will hugely benefit from the use of excel in terms of administration: assisting with payrolls, invoices, finances and sales targets. Thus, this application will benefit the efficiency and accuracy of the tasks performed by your administrative staff, fundamental to your employees and clients. Further, Excel allows tasks to be automated through the use of macros, a tool in the program that this can run a sequence of tasks, allowing you to focus on other sectors of your business.

5.2.1.1.8 PowerPoint

Microsoft PowerPoint is a program that allows users to create presentations using visuals, animations and transitions. PowerPoint will greatly benefit SMART Company's advertising options, pitching tools and client outreach, allowing information to be presented to an audience in an engaging way. PowerPoints also offers many forms to export slideshow files, the PDF format most relevant to SMART Company. In combination with SharePoint, Powerpoint offers an optimal solution for your teams to work together by supporting collaborative editing, produce innovative presentations that will engage employees in the creative process and clients in your creative ideas.

5.2.1.1.9 Publisher (PC only)

Microsoft Publisher is a graphic design program that is similar to the text processor Microsoft Word, providing a platform to create documents. However, Publisher focuses on the design and visual composition of a page as opposed to text formatting and proofing. This makes a combination of Publisher and Word extremely beneficial for your marketing company and the opportunity to provide professional pdf documents to your clients. It is as an easy to learn and use publishing option for creating designs and graphics, which alongside existing marketing and graphic design software, could elevate proposals and marketing material.

5.2.1.1.10 Intune

Microsoft Intune is a cloud-based service that focuses on offering device-level management for each and mobile application management (MAM). You control how your organization's devices are used, including mobile phones, tablets, and laptops.

5.2.1.1.11 Azure Information Protection

Microsoft Azure is a cloud-based enterprise online console, that allows your employees to log in and manage their files and resources in the Microsoft Cloud. In effect, it offers a unified, customisable console which can build and manage other Cloud (Internet) applications in the console. These services. To get access to these resources and services, an employee is required to have an active internet connection and the ability to connect to the Azure portal.

5.2.1.1.12 Access (PC only)

A database is a collection of data, typically electronically. Microsoft Access is a Database Management System (DMS) that allows users to manage their database, such as adding, modifying and removing data (another DMS is mentioned in the Website section). Unlike

Excel which manages data through the manipulation of spreadsheets, Access offers much more advanced but effective databases to store data. It would allow SMART Company to efficiently manage and analyse vast amounts of data to create into information, however it may be at a level that is more suited when your company expands. Microsoft Access requires specialist knowledge to operate effectively, however with larger amounts of data will allow for high levels of efficiency, accuracy, and data storage.

5.2.1.1.13 Pricing

The follow section describes each Microsoft 365 subscription package for your organisation:

Microsoft 365 Business Standard

This package offers desktop versions of office apps with premium features, 1TB of cloud storage per employee, and the ability to host meetings and webinars for up to 300 attendees, with attendee registration. Further, it offers tools to manage client appointments.

From the above list, it contains the following applications:

- Word
- Excel
- PowerPoint
- Teams
- Outlook
- OneDrive
- SharePoint
- Exchange
- Access (PC only)
- Publisher (PC only)

Microsoft 365 Business Premium

The Microsoft 365 Business Premium is intended to be a unified solution for businesses, offering high-quality Office programs, cloud-based services, and integration with comprehensive security. This package offers the features and applications included in Microsoft 365 Business Standard (including 1TB of cloud storage per user), as well as advanced business grade security, the ability to manage enterprise devices, and data and cyberthreat protection.

From the above segment, it contains all of the applications included in Microsoft 365 Business Standard as well as the following applications:

- Intune
- Azure Information Protection
- Access (PC only)
- Publisher (PC only)

Pricing

Microsoft 365 Business Standard:

The price point of this package is at $17.20 per user per month. This means it will cost approximately $4954.00 for two years of service.

Microsoft 365 Business Premium:

The price point of this package is at $30.20 per user per month. This means it will cost approximately $8698 for two years of service.

Evaluation

Cracked Solutions recommends purchasing the Microsoft 365 Business Premium package, as it will elevate the internal employee processes and external client impression of SMART company. Featuring many cloud-based models, the Software-as-a-Service model also offers opportunity to scale with your company's needs. The premium package offers itself as the optimal solution as it offers an array of applications relevant to the work performed at SMART Company.

As discussed above, Microsoft Teams will become a central application used by your organisation to organise workflow, creating meetings, keep up to date with tasks; coupled with Microsoft Exchange will allow for high levels of transparency in who's doing what task and when. SharePoint and OneDrive will allow your business files to be easily accessed and retrieved by employees. Coupled with Exchange, it will be shared easily among employees in the organisation. Microsoft 365 Business Premium also ensures the highest levels of security with Microsoft Intune; allowing system admins to easily control business devices (both laptops and phones). Finally, with Intune's integration with Microsoft Defender and Endpoint Protection, data and device security will always be kept in high regard, solidifying the strength of your corporate's information.

Installation:

Microsoft 365 offers in-depth setup guides in the admin centre, offering step-by-step guidance for:

- **Prepare you environment:** Add user profiles for each of your employees
- **Email setup guide:** Configure Microsoft Exchange Online (setting up new email accounts, migrating email stores and configuring email protection)
- **Microsoft 365 setup guide:** Configure SMART Company's organisation-devices (expanded on in the following section as their laptops and mobile phones)
- **Remote work setup guide:** Additional resources to facilitate secure and private remote work.
- **Authentication and accounts guide:** Set up organisation two-factor authentication (expanded on in the security section)
- **Azure Active Directory (AD) setup:** Set up and manage users access to the cloud applications offered in Microsoft 365 specifically through the authentication of users.
- **Guides for security:** Microsoft Intune and Microsoft Defender for Endpoint guide (expanded on in the security section)
- **Collaboration resources:** Step-by-step articles to set up each 365 application on your users' devices, set up Microsoft Teams, OneDrive and SharePoint

Due to the professional and high-quality of the Microsoft organisation, these guides are step-by-step and accurate. Therefore, it could be feasible for SMART Company to assign an administrative employee for instance to following the guide. The difficulty is that a greater number of mistakes or unknown mistakes could be made, as a step-by-step guide is less 'knowledge-based' than training the employee. In this way, an estimation of 15 hours could be estimated for one employee to set up 12 user profiles and Microsoft 365 applications on 12 mobile phones and 12 computers. Instead, a nearby Microsoft store could be contacted to assist. Given the greater experience, an experienced installer could take an estimated 10 hours. In either situation, the Microsoft 365 interfaces make maintaining the package once set up intuitive.

Warranty:
Not applicable.

Pricing Summary: Microsoft 365 Business Premium

Initial Costs:

- **Installation Cost:**
  - Delivery Fees:
    - Not applicable.
  - Personnel Fees:
    - Experienced installer (10 hours): $1500.00
    - Employee (15 hours): $2250.00
- **Product Costs:**
  - Individual product:
    - Not applicable.
- **Total Initial cost:** $2250.00

Maintenance Costs:

- **Total Recurring cost:**
  - Microsoft 365 Business Premium per user per month: $30.20
  - Microsoft 365 Business Premium for 12 employees (for two years): $8,697.60

Total cost: $10947.60

6. Workstations

6.1 Workstation Device

6.1.1 Computer

We have carefully analysed and evaluated the current Dell Optiplex and associated workstation systems utilised at Smart Company and we recommend a switch to the use of laptops instead of desktop computers. There is a clear opportunity to enhance productivity in your workplace, as you mentioned in your interview, through the flexibility offered by this switch retaining quality as well as allowing your employees to access the office remotely.

Laptops provide versatility through the onboard systems they come with such as, Wi-Fi, Bluetooth, inbuilt camera, keyboard, and display. These systems allow for your employees to work wherever it is deemed necessary without the need to carry extra peripherals. For example, if one of your graphic designers are required at the Liverpool office and are based in Wollongong, they can simply take their laptop with them and complete the work required at Liverpool easily due to the portability a laptop offers. Another example would be if one of the marketing consultants needed to take a video call with a client, they could take their laptop into a meeting room and complete the call without any distractions. Thus, laptops cater for many situations and offer flexibility to your employees to complete work in a way that works for them.

Your proposal specification has provided the parameters for the computer device, of which being a laptop with a 15-inch (38.1 cm) screen minimum. We have evaluated and selected a laptop to suit these needs as well as considering future needs as the company becomes larger.

Cracked Solutions recommends the new Dell Inspiron 15, as the laptop to select.

We have come to this conclusion by evaluating a range of laptop options and narrowing it down to a list of top four. (See appendix D.1 for more information).

Operating System

The Inspiron 15 runs on the Windows 11 Pro OS. This Operating System (OS) retains the familiarity of the current Windows 10 OS currently being used on your server systems and thus also on your employee's computers. This will reduce any training required by employees, whilst modernising their workspace. Windows 11 Pro offers clear advantages

over Windows 11 Home, the other OS offered on this laptop, enabling your business' devices to utilise BitLocker, an encryption tool for files and drives stored on the device and integration with the Intune device management system (see the Endpoint Security section below).

CPU

The CPU or central processing unit can be thought of as the brain of the laptop. The Inspiron 15 comes with a Gen 12 Intel i7 Processor that features 10 cores and 12 threads (See appendix C.1 for a more detailed explanation on threads, cores and the CPU). This means that it is very efficient in processing a range of tasks. Coupled with the software packages we recommend with Microsoft 365 this will allow employees always have peak performance when completing tasks using the laptops.

Display

A high-quality screen is offered with this laptop, with a 15.6 inch (39.6 cm) display, fulfilling your initial requirement of a 15 inch screen (38.1 cm) minimally. Expanding on your emphasis on the display, this laptop also focuses on ergonomics and productivity for your employees'. It is a Liquid-crystal display (LCD), meaning that liquid crystals to produce the display. This means that they display consumes much less power, and is thinner and lighter than Light-Emitting Diode (LED) displays.

Storage

The storage that the Inspiron 15 comes with is 512GB. The current hardware at SMART Company has 500GB of storage in six of their desktop computers with two having 1TB of data. This means that existing files can be easily transferred onto the physical drive of the new laptops. Importantly to note though, our current solution utilises the storage offered by SharePoint. Assigned 1TB of storage in the Microsoft 'Cloud' (view the Microsoft 365 section), the 500GB of files currently stored on the desktop computers can be uploaded. Instead, this additional physical hard drive space can be used for employees to store documents that can be edited offline in case they are visiting a location with no Internet connection. This will offer greater flexibility, efficiency, and safety for employee files. t

RAM

The Random Access Memory (RAM) that the Dell Inspiron 15 comes with is 16GB of DDR4 3200 MHz RAM. (See appendix C.1 for more information regarding RAM). This means that the laptop can meet high bandwidth rates to upload a large amount of files in the 'Cloud'.

This ensures that the laptop to will never drop in performance with the current tasks they employees are completing. We chose to have particularly 16 GB of RAM for the laptops as a measure to ensure the suite of Microsoft 365 applications do not skip a beat when in use by Smart Company employees. This also offers a lot of opportunity to have multiple administrative and designing applications active while employees are performing 'basic web browsing' without a drop in performance.

Battery Life

The Dell Inspiron 15 comes with a 54 Watt Hours (WH) integrated battery. This ensures that the company laptops will have an effective battery life for employees who are out of office, offering greater autonomy to staff and the 'reliable' services that they can offer clients. Further, as described below in section 5.1.3, the use of the dock will allow employees to not need to bring a charger to work as the laptops will receive charge whilst at work through the dock.

Camera

The Inspiron 15 features 1080p at 30 fps FHD RGB camera. This will allow for high quality video when conferencing Microsoft Team calls between the Liverpool and Wollongong offices, particularly more informal meetings between teams of staff. However, it also offers the versatility to remote workers to conference where necessary. This will enhance the communication levels between each of the offices and support employee's in providing 'high-quality, on-demand' services to your clients.

Ports

The USB C port on the laptop will allow employees to use DisplayPort over USB C and connect many monitors and peripheral devices with just one cable through the use of a dock (discussed in section 5.1.3); which will help with cable management as well provide an easy way to connect and disconnect devices to the laptop. The other ports available on the laptop will provide useful access to a range of peripheral devices when away from the office; allowing employees an abundance of freedom in how they want to use their laptops.

Pricing

The new Dell Inspiron 15 with a 3-year warranty is priced at $1741.30 for each laptop; totalling $20895.00 to provide laptops for all employees. It can be purchased from the online Dell store.

Installation:

Estimated delivery of the laptops are two-to-three business days, fulfilling the timeframe for the new system. Shipping to both offices accordingly is included in the price of the laptop.

Warranty: A three-year warranty was an additional cost for each of the laptops, providing a guarantee for hardware support, repairs and support over chat, email, and phone. It is an additional $242.30 for each laptop.

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Pricing Summary: Dell Inspiron 15

Initial Costs:
- **Installation Cost:**
  - Delivery Fees:
    - Included in product price
  - Personnel Fees:
    - Not applicable.
- **Product Costs:**
  - Individual product:
    - One Dell Inspirion 15 laptop: $1499.00
    - Three-year warranty (for each laptop): $242.30
    - Total for one laptop with warranty: $1741.30
  - Laptops for 12 employees with warranty: $20895.60
- **Total Initial cost:** $20895.60

Maintenance Costs:
- **Total Recurring cost:**
  - None.

Total cost: $20895.60

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6.1.2 Monitor

Cracked Solutions recommends the use of monitors in conjunction with laptops to allow for peak productivity and ergonomics at both offices (Liverpool and Wollongong). Because one of your main uses for computers is reading and responding to emails as well as viewing PDFs, supplying your employees with two screens (laptop and monitor) will enhance their productivity by allowing them to keep two tabs open at all times (one on each screen) and thus lower the number of clicks necessary for movement around their desktop environment.

Through our market research, Cracked Solutions recommends the Phillips 23.8" Monitor to enhance your efficiency and office environment. (See appendix D.2 for more information).

Features

This monitor comes with great adjustability in viewing angle, pivot, and swivel; also utilising flicker free technology to lower eye fatigue. These features allow you to achieve great ergonomics for your employees. It also is rated very highly for its low energy consumption which it achieves by modulating the brightness of the screen to its surroundings to provide optimal light. We have chosen it to have a 16:9 aspect ratio to ensure plug and play compatibility with your laptops without the need to set anything up. These monitors will also fit well on existing workstations and provide the best cost to benefit compared to other monitors.

Pricing

Ordered from Australian online retailer mwave.com, this monitor is priced at $269 per monitor, totalling $3228 for a monitor at each of the 12 workstations in the Wollongong and Liverpool offices.

Installation:

Estimated delivery of the laptops are three business days, fulfilling the timeframe for the new system. Shipping to both offices accordingly is included in the price of the monitor.

Warranty:

A three-year warranty from the manufacturer is provided in the cost of the monitor.

Pricing Summary: Phillips 23.8" Monitor

Initial Costs:

- **Installation Cost:**
    - Delivery Fees:
        - Included in product price.
    - Personnel Fees:
        - Not applicable.
- **Product Costs:**
    - Individual product:
        - One Phillips 23.8" Monitor with three-year-warranty: $269.00
    - Monitors for 12 employees with warranty: $3228.00
- **Total Initial cost:** $3228.00

Maintenance Costs:

- **Total Recurring cost:**
    - None.

Total cost: $3228.00

6.1.3 Device Dock

A device dock provides a simple way of plugging in and out of the workstations at the Liverpool and Wollongong offices. We recommend a J5create Docking Station and a ALOGIC 100W Wall Charger as the ultimate solution to docking your computers to your workstations. (See appendix D.3 for other options) Smart Company employees will be able to seamlessly transition between remote and office work, connecting their laptops to the dock without concern for carrying around additional peripheral devices. Whilst plugged in, your employee's laptops will: receive charge, connect to the monitor recommended above, as well as act in a similar way to a PC computer with a keyboard and mouse. This familiarity will help your employees easily transition to the use of laptops.

The ALOGIC 100W Wall charger will work in conjunction with the J5Create docking station to charge the employees laptops at the offices. This will allow your employees to keep the standard charger that comes with the laptop with them at home or in the laptop bag, thus limiting the amount of plugging in and out devices at each office. This greatly reduces inconvenience. It also means that if an employee forgets their charger at home, it is no worry as their laptops will receive charge from the office docking station.

The J5Create Docking station will have a keyboard, mouse, display monitor and potentially ethernet cable and headphones connected to it. This dock will then connect to the laptop via the USB C cable within it (see appendix 2.1). This will operate as a plug and play unit to make it as simple as possible for the employees to use. The dock also will also improve the ergonomics for your employees workstations by acting as a stand to put the laptop onto (see appendix 2.4).

Moreover, the J5Create Docking station and ALOGIC 100W Wall charger have been chosen in combination as the most scalable options available due to the multiple ports available on the dock. As well as the high-power delivery from the wall charger (100 watts). If SMART Company purchases more laptops, there is plenty of overhead power available to charge almost all laptops. There is also option to expand the current setup to multiple monitors (such as triple-monitor workstations). This will allow for maximum scaleability for your employee's office workstations and lower costs in the future should Smart Company decide to add another monitor or two to their workstations.

Pricing:

Available from Australian online retailer mwave.com, the J5Create Docking Station and ALOGIC 100W Wall charger is $249.00 per unit, totalling $2988 for the dock and power delivery combination on 12 workstations.

Installation:

Estimated delivery of the laptops are up to seven business days, fulfilling the timeframe for the new system. Shipping to both offices accordingly is included in the price of the system.

Warranty:

A one-year warranty from the manufacturer is provided in the cost of the wall charger. Although this is not three years, each individual dock is not a high price, and the likelihood of failure is not great nor critical.

Pricing Summary: J5create Docking station and a ALOGIC 100W Wall Charger

Initial Costs:

- **Installation Cost:**
    o Delivery Fees:
        ▪ Included in product price.
    o Personnel Fees:
        ▪ Not applicable.
- **Product Costs:**
    o Individual product:
        ▪ One Phillips 23.8" Monitor with one-year-warranty: $249.00
    o Monitors for 12 workstations with one year warranty: $2988.00
- **Total Initial cost:** $2988.00

Maintenance Costs:

- **Total Recurring cost:**
    o None.

Total cost: $2988.00

6.1.4 Peripheral Devices

6.1.4.1 Laptop Case

Cracked Solutions have determined that it is important to provide a protection device alongside the laptops we are providing to you in our solution. A laptop case protects the laptop when it is not in use, such as when travelling, when it's at home or in a bag. We have selected a laptop cover custom for DELL HP 15.6-inch laptops, the Laptop Cover Bag Notebook Sleeve Case Skin Pouch for Dell HP 15.6-inch. It also contains a thin profile and many pockets to store various miscellaneous items. This laptop case was chosen as a preventative measure in ensuring the longevity of the laptop.

Materials

The laptop case is made from neoprene; a material that is entirely waterproof. This will ensure the expensive electronic devices we are supplying you are as safe as possible when commuting to and from work; as well as when you are on the go in general.

Pricing

The bespoke laptop case can be sourced from Ebay.com. The laptop case is priced at $10.99 a unit, totalling $131.88 for each of the employee's organisation-owned laptops.

Installation:

Delivery is free with a 20-day estimated delivery arrival. This fulfills the time frame for the new system.

Warranty:

No warranty is provided; however, the Ebay service offers 30-day refunds.

Pricing Summary: Laptop Cover Bag Notebook Sleeve Case Skin Pouch for Dell HP 15.6 inch

Initial Costs:

- **Installation Cost:**
    - Delivery Fees:
        - Free.
    - Personnel Fees:
        - Not applicable.
- **Product Costs:**
    - Individual product: $10.99
    - Laptop cases for 12 laptops: $131.88
- **Total Initial cost:** $131.88

Maintenance Costs:

- **Total Recurring cost:**
    - None.

Total cost: $131.88

6.1.4.2 Keyboard and Mouse

SMART Company also indicated that they would require a mouse, keyboard with a screen for each laptop. The choice of a laptop increases mobility as the touchpad of the laptop can be used, however the keyboard and mouse will offer greater precision and productivity with your systems particularly for graphic designers. We have chosen the Dell KM5221W Pro Wireless Keyboard and Mouse. This keyboard is a full-sized keyboard and offers 12 programmable function keys (which can improve productivity) as well as up to 36 months of battery life. With this system there will be less clutter on the desks in the form as wires and will enable a higher degree of ergonomics allowing for the employees to arrange their desks in a way that suits their personal needs. Further, the Dell Peripheral Manager (DPM) software allows you to customise the keyboard and mouse to your personal preferences

Features
- Buttons that can be programmed to perform a range of tasks such as opening applications
- Easy customisation of DPI (the speed at which the mouse moves across the screen)
- 2 angled tilt options for the keyboard
- Symmetrically designed for right and left handed users (of the mouse)
- Secure; uses 128-bit AES (Advanced Encryption Standard) to transmit keyboard and mouse data to the laptop
- 3 AAA batteries needed to last up to 36 months for both devices

Pricing
The Dell KM5221W Pro Wireless Keyboard and Mouse is priced at $59 a unit from JB HI-FI, totalling $708 for a customisable keyboard and mouse at each workstation for each laptop.

Installation:
Standard delivery is priced at $6 to both the Wollongong and Liverpool offices for 8-day-deliver. This fulfills the time frame for the new system.

Warranty:
JB HI-FI offers a three-year Advanced Exchange Service, whereby they will ship a replacement if damage has occurred.

Pricing Summary: Dell KM5221W Pro Wireless Keyboard and Mouse

Initial Costs:

- **Installation Cost:**
    o Delivery Fees:
        ▪ Delivery to the Wollongong and Liverpool offices: $12.00
    o Personnel Fees:
        ▪ Not applicable.
- **Product Costs:**
    o Individual product: $59.00
    o Laptop cases for 12 laptops: $708.00
- **Total Initial cost:** $708.00

Maintenance Costs:

- **Total Recurring cost:**
    o None.

Total cost: $720.00

6.2 Mobile Phone

Due to communication being a significant part of your company's work, we have decided to adjust the portable aspect of this area around employee use of mobile phones. This will act as a replacement of the outdated and inefficient telephones that are currently used in your Wollongong office, where your company will benefit as a whole from switching to a system focused on mobility and productivity.

We have assessed all possible options and concluded that a personal mobile phone for each of your employees will most sufficiently suit your company's needs. This is due to the fact that your workers spend quite long periods of time speaking to clients and other partners over the phone when discussing various projects and business opportunities. Currently, we are under the impression that landline telephones are used for each employee which has very little versatility in terms of other uses. Without the capability of being able to complete tasks other than solely calls, the integration of personal mobile phones will allow your employees to not only continue these business calls on a much more portable device that can be used outside of their desk environment, but also potentially utilise the many innovative features that current mobiles are known for, leading to numerous benefits for your entire business and its goals for the future.

The mobile phone we have chosen as part of our proposition is the 'Samsung Galaxy A13', released by Samsung in March 2022 (Samsung 2022). We are certain this device will provide many advantages to your business focusing on an increase in mobility for your workers.

(Samsung 2022).

Operating System

The phone operates on the Android 12 operating system, the second-most current with the potential to upgrade to Android 13, with an Octa-core processor that can perform advanced tasks without significantly draining battery, as well as handle high resolution videos and images (Samsung 2022). This will be highly useful in the case of an employee wanting to observe graphic designs for advertising campaigns outside of the office without access to their primary laptop, thus contributing to the portable nature of our solution.

Central Processing Unit

It has a central processing unit (CPU) speed of 2GHz, meaning it can process 2 billion instructions per second (Jesper 2022). coupled with a random access memory (RAM) of 4GB. As the employees will not be using their phones for high-speed functions that require a lot of processing power, such as gaming, this is an excellent rate that will allow them to undergo daily tasks on their mobiles in an efficient manner, some of which potentially include emails, texts, and looking at images.

Storage

With a 128GB storage space, employees have the option to download and store files that can be used outside of the office in situations like in-person meetings and marketing campaigns, while the majority of files and data will still be stored in their laptops.

Battery Life

A very important feature of this device is its long-lasting battery life through a 5000 mAH battery that accommodates for a general length of 34 hours 08 minutes (Nanoreview 2022). In a bit more depth, a review undertaken by GSMArena (GSMArea Team 2022) concluded an endurance rating of 114 hours which measured how long the phone's battery lasted if it was used for 1 hour of telephony, web browsing, and video playback every day. Specifically, the total web browsing time was 16 hours 13 minutes, with a total video playback time of 15 hours 59 minutes. But more importantly, the total talk time was 38 hours 20 minutes, which is a great length for the main use your employees will focus their work around. As all phones do, it will eventually run out of charge, taking 2 hours 18 minutes to fully charge back up to 100%, where if regularly charged outside of office hours or employees do not allow it to reach 0%, will not adversely affect productivity.

In-built Security

The device also implements its own security software known as 'Samsung Knox'. This software works to defend business information and data from online malware and threats, while providing constant real-time protection even where users are currently using the phone (Samsung Knox 2022).

Camera

Although the primary use of a mobile phone will not involve taking photos, it should still be noted that a quad camera is integrated. The includes a main camera which acts similar to a standard camera with the addition of clear detail, an ultra wide camera allowing for

expansion of viewing angles, a depth camera to customise the lens focus, and a macro camera to make the subject of the image stand out from its background. If employees are required to scan a document or design outside of the office without access to the professional scanner, these features allow them to attain a high quality image for further use in their projects.

Installation:

The Samsung Galaxy A13 can be purchased from Harvey Norman with standard delivery to both the Wollongong and Liverpool offices at $7.95.This means that the mobile phone for all employees would be successfully implemented within the six-week instalment period.

We recommend following the instructions that are included in the product box to best install and activate the mobile phone in a timely and effective manner.

Warranty: The mobile phone is not supplied with any warranty. However, an optional 3-year warranty plan is available to add on to the purchase, which we have chosen to include for an additional $159 for each product, thus allowing any potential damage or problems to be fixed in the first few years of use within your company.

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Pricing Summary: Samsung Galaxy A13

Initial Costs:
- **Installation Cost:**
    - Delivery Fees:
        - Delivery to the Wollongong office (postcode 2500): $7.95
        - Delivery to the Liverpool office (postcode 2170): $7.95
        - Total delivery fees: $15.90
    - Personnel Fees:
        - N/A
- **Product Costs:**
    - Individual product: $329.00
    - Extra 3-year warranty: $159
    - Total product fees (for all employees): $5871.90
- **Total Initial cost:** $5871.90

Total cost: $5871.90

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6.2.1 Mobile Phone Plan

Without a plan, the mobile phone included in our solution is nearly useless in the context of your company's environment. A plan allows employees using the mobile phones to actually make calls and send text messages while also providing them with the ability to access Internet services outside of the office's WiFi, thus leading to everlasting benefits for your company's entirety.

We will purchase an 'Aussie Broadband Stay Connected Package' for each employee's mobile phone, which has various features that will improve the efficiency of service and tasks.

Subscriber Identity Module (SIM)

The providers of this plan 'Aussie Broadband' will ship what is known as subscriber identity module (SIM) cards that each of your employees will insert into their new Samsung Galaxy

A13s in order to activate their plans. The main purpose of these cards is to store information that provides a connection or pinpoints a mobile phone to a specific mobile network (Gillis n.d), with each of them containing:

- Unique identification number
- Location
- Phone number
- Network authorisation data
- Personal security keys
- Contact lists
- Calling logs
- Text messages

Due to the nature of your company as a marketing agency, we are aware of the countless hours spent over the phone by your employees. That is why it is so beneficial that this plan offers an unlimited supply of calls and texts, allowing all workers to not worry about the time they spend in contact with various clients and partners, and instead direct all of their focus to the actual tasks and projects at hand.

Cellular Data

The plan provides 10GB of cellular mobile data, "a radiotelephone system in which a geographical area is divided into small sections each served by a transmitter of limited range" (Merriam-Webster 2022), which allows each mobile phone device to connect to an Internet source in absence of the company WiFi. Since your employees will almost always conduct their work inside the office, this amount is more than sufficient to function off, where data will most likely only be used for the occasional work-related meeting outside of the office. Not only this, but the plan also comes with an extremely useful feature known as data sharing, which Aussie Broadband claims "allows all the services on the same account to combine their data and create a pool of data that all services can draw from" (Aussie Broadband 2022). Since all employees will be on this same plan, this addition will immensely benefit your company's endeavours. In the situation that one employee requires a greater amount of cellular data than the others, they are able to utilise more than their 10GB of allocated data in that particular month to best benefit the business. For example, a marketing consultant who may have a role to meet clients in person or promote an advertising campaign in populated areas will most certainly need more access to data on their mobiles than a strategic consultant who undergoes meetings nearly always at the work location.

Installation:

The Aussie Broadband Stay Connected Package can be purchased from Aussie Broadband with free shipping to both the Wollongong and Liverpool offices. This means that the plans for all employees would be successfully implemented within the six-week instalment period.

We recommend following the instructions that are included in the product box to best install and activate the included SIM card into the mobile phone in a timely and effective manner.

Warranty: The plan is not supplied with any warranty. However, the plan is risk-free, meaning that it can be cancelled at any time, leaving no obligation for further use to the user.

Pricing Summary: Aussie Broadband Stay Connected Package

Initial Costs:
- **Installation Cost:**
  o Delivery Fees:
    ▪ $0
  o Personnel Fees:
    ▪ N/A
- **Product Recurring Costs:**
  o Individual product: $20/month
  o Total product fees (for all employees): $240/month
- **Product Costs:**
  o Total 24-month product fees (for all employees): $5760
- **Total Initial cost:** $5760

Total cost: $5760

6.2.2 Phone Cover

As a way of preventing the phone from being damaged by employee accidents, we find it reasonable to get each employee a protective cover.

We have chosen the 'Galaxy A13 Soft Clear Cover (Black)' for all workers to put on their phones, as we believe its features are best suited for a cover's purpose in the context of your company.

Material

The cover's material is made of thermoplastic polyurethane (TPU), a very durable and flexible material which helps protect the phone from being damaged by bumps, shocks, and scratches (Samsung 2022). In turn, this allows employees to keep their phones safe so they are able to regularly use them for work tasks.

Figure 3: Galaxy A13 Soft Clear Cover (Samsung 2022).

Installation:

The Galaxy A13 Soft Clear Cover can be purchased from Samsung with free shipping to both the Wollongong and Liverpool offices. This means that the covers for all employees would be successfully implemented within the six-week instalment period.

We recommend following the instructions that are included in the product box to best attach and use the cover with the mobile phone in a timely and effective manner.

Warranty: The cover is not supplied with any warranty. However, due to the cheap cost of the product, this should not be a problem as a replacement can easily be purchased.

Pricing Summary: Galaxy A13 Soft Clear Cover

Initial Costs:
- **Installation Cost:**
  - Delivery Fees:
    - $0
  - Personnel Fees:
    - N/A
- **Product Costs:**
  - Individual product: $14
  - Total product fees (for all employees): $168
- **Total Initial cost:** $168

Total cost: $168

6.2.3 Headset

It is obvious that your employees will be spending extended periods of time on the phone during office hours, however this is quite illogical and unhealthy to constantly have their hand holding the phone up to their ear. Instead, we are sure a headset should be used instead, allowing them to speak to clients and others in a much more comfortable and ergonomic manner than the current setup involving a landline telephone to best complete their tasks and achieve company goals.

We have chosen to buy the 'Microsoft Modern USB-C Headset (Black)' for every worker to use when making calls, as this headset provides the most benefits for what is required in your company's telephony aspects.

The headset is advertised as lightweight with padded ear cups for a comfortable wearing experience, (Microsoft 2022), which is highly beneficial as your employees will not be in any

Figure 4: Microsoft Modern USB-C Headset and Cable (Microsoft 2022)

sort of pain or discomfort for the long call times their jobs entail. It features a microphone

which reduces background noise, in turn allowing individuals on the other end of the call to hear only the employee's voice rather than other distracting sounds.

Connection

Its connection relies on a single cable with a USB-C at the end that is able to connect to each employee's phones as well as their laptops, as the Samsung Galaxy A13 and Inspiron laptop each have a USB-C port. As a result, the portable and mobile nature of their jobs are heightened as they are not limited to their desk when making calls or attending meetings and can move freely as long as their device is kept close.

Features

- A control remote is attached along the cable which allows for various functioning when using the headset. This includes:
- A button to make or answer calls for Microsoft Teams that integrates with our chosen Window OS PCs
- A button to make or answer calls for standard mobile calls
- A button to adjust the user microphone's status with a light indicating whether they are muted or can be heard
- Buttons to increase or decrease the volume of sound output

Therefore, employees are given much versatility with their headsets, leading to the best possible experience when during calls and meetings related to the business.

Installation:

The Microsoft Modern USB-C H Headset can be purchased from Scorptec with a delivery and parcel protection fee of $50.50 to both the Wollongong and Liverpool offices. This means that the covers for all employees would be successfully implemented within the six-week instalment period.

We recommend following the instructions that are included in the product box to best activate and connect the headset with user phones and laptops in a timely and effective manner.

Warranty: The headset is has a 1-year warranty period, which although not the most amount of time, is still adequate for any problems within the first period of use.

Pricing Summary: Microsoft Modern USB-C Headset

Initial Costs:
- **Installation Cost:**
    - Delivery Fees:
        - $34
    - Parcel Protection Fees:
        - $16.50
    - Personnel Fees:
        - N/A
- **Product Costs:**
    - Individual product: $69
    - Total product fees (for all employees): $828
- **Total Initial cost:** $878.50

Total cost: $878.50

7. Conferencing

As your company focuses a significant portion of your work towards meetings when discussing projects with clients, tradies, partners, and the other offices, we have made the decision to base your meeting rooms around technology to increase productivity and improve overall business benefits. This will be structured with the two largest meeting rooms in each office being allocated as the main meeting rooms revolving around video conferencing software to communicate with others outside of the office while also inside, and the other meeting rooms continuing to be for in-office meetings only. As a result, the meetings conducted by employees will be enhanced to a great extent, thus leading to a much more efficient use of conference time and excellent results for your company.

7.1 Motorised Projector Screen

Rather than solely focusing on a group forum conference style where individuals are sat around a table to discuss various matters, we feel it is very necessary to incorporate employee devices such as phones and laptops consisting of various projects and data into the meeting environment as a way of showcasing what is being worked on and work towards the best possible solutions. In order to do so, some sort of display hardware is required, which is why we have integrated a projector screen into our conference communication solution. In turn, employees both inside and outside the office are able to view various presentations being displayed onto this screen in order to work on tasks and develop projects as a business. We have chosen two separate screens, one for each office, due to the dimensions of each of the largest meeting rooms from the diagram provided to us.

7.1.1 Wollongong:

For the Wollongong office, the screen we have chosen is the 'Brateck Motorised Projector Screen BT-PSAA135', a more than capable product that no doubt will achieve its purpose of displaying what is relevant to the meeting effectively, leading to benefits within your company as a whole.

Figure 5: Brateck Motorised Projector Screen (Officeworks 2022)

Dimensions

The entire product measures at 135" or approximately 3.43m in diagonal length with a width of 3.31m and a

height of 1.855m, with the actual screen itself measuring 3m wide and 1.68m high, best displaying an aspect ratio of 16:9 (Brateck 2019). This size allows the input being projected to be visible to all viewers in a much larger display than what would usually be used in your previous meetings, in turn leading to more understanding and involvement in discussion by your employees. The aspect ratio also matches the laptops that are being used as well as the projector itself, which helps create an identical image to display with no distortion or changes from what is originally created on the laptop.

Appearance

Its physical structure consists of a black-based screen with a matte white front, which helps eliminate any light penetration from other sources in order to provide superior colour reproduction to viewers. Not only this, but the black masking borders around the screen's front contribute to enhanced picture contrast to most effectively display the input source's image. For example, a graphic design might involve many different colours and contrasts that are useful in its marketing campaign, which is able to be showcased to employees and clients on a much larger screen for their input and feedback. It is highly sustainable as the screen offers low power consumption, meaning that when in use, will not consume as much electricity as other projector screens would, therefore leading to a greener office environment.

Functioning

The screen functions through a motorised retractable sheet. This is highly convenient as users are not required to manually pull down and push up the screen when it is needed, but instead only need to use a 3-way wall switch or a radio frequency (RF) remote that is included to adjust the screen's state. These controls allow the individual to roll down the screen in preparation of a meeting's beginning, roll up the screen at the conclusion of a meeting, when the wall behind is needed for any reason, or for compact storage, and pause the processing of rolling up or down if necessary. These functions make the projector screen quite versatile in its use, allowing for the most efficient conduction of meetings for the best results for the company.

Installation

The Brateck Motorised Projector Screen BT-PSAA135 can be purchased from Officeworks with a large item delivery fee of $59.95 to the Wollongong office. This means that the screen would be successfully implemented into the main meeting room within the six-week instalment period.

With the screen being mounted to the wall in the Wollongong office, we estimate that this will take approximately 3 hours for instalment, costing $450. Based on the diagram provided, we have concluded the best option is to mount the screen to the far right wall of the largest meeting room in the office, which will in turn leave approximately 0.7m on each side of the wall. This is more than enough extra space to use for other purposes in the room, thus proving this screen is a great fit for the Wollongong office. In terms of its placement in comparison to the employees sitting in the room, we found that the table is approximately 5m in length, meaning that if centred in the room, will leave approximately 1.9m on each side. This allows the closest person to be about 2m away from the screen and the furthest person to be about 7m away. These distances are almost perfect, however the closest person may be a bit too close which might call for some readjustment of seating depending on the number of employees attending the meeting, but nonetheless is still a good viewing distance.

Warranty: The screen does not come with any warranty, how it does have the option to purchase an additional 3-year warranty period for $70, which we have decided to include in our solution as it prevents the risk of any damage or dysfunctionality causing another entire purchase.

Pricing Summary: Brateck Motorised Projector Screen BT-PSAA135

Initial Costs:
- **Installation Cost:**
  - Delivery Fees:
    - $59.95
  - Personnel Fees:
    - $450
- **Product Costs:**
  - Individual product: $398
  - Extra 3-year warranty: $70
- **Total Initial cost:** $827.95

Total cost: $827.95

7.1.2 Liverpool:

For the Liverpool office, we have decided on the 'Selby 90" 16:9 Motorised Retractable Projector Screen' as we are certain this device will best contribute to a convenient and effective meeting room environment that improves the outcomes of the meetings themselves and the projects discussed.

Figure 6: Selby Motorised Projector Screen (Selby 2022)

Specifications

The screen when retracted has a 100" or approximately 2.54m diagonal length with dimensions of 2.19m in width and 1.29m in height, and the screen itself 2.10m wide and 1.20m high, displaying a projection with a 16:9 aspect ratio (Selby 2022). These measurements contribute to a great viewing experience for employees present in the meeting rooms as well as individuals connecting through video conferencing that allows them to see a much larger projection than what would be seen on their previous PCs, along with a ratio that perfectly matches the projector's display and each employee's laptop.

Material

Similar to the Wollongong office's projector screen, this screen is made out of a black-backed material with a matte white front to provide the best possible image of what is displayed in the absence of any light penetration from other sources. It also has black masking borders around the screen to help frame or stand out the image being displayed for viewers in contrast to the office environment and walls behind.

Functioning

It also functions though a motorised retractable screen that is controlled by either a 3-way wired control panel or a radio frequency (RF) remote, instead of manually having to adjust the screen's position. These controls are identical to the Wollongong office's, allowing the user to roll down the screen in preparation of a meeting's beginning, roll up the screen at the conclusion of a meeting, when the wall behind is needed for any reason, or for compact storage, and pause the processing of rolling up or down if necessary. These capabilities increase the screen's versatility which in turn results in its most effective use during meetings.

Installation

The Selby 90" 16:9 Motorised Retractable Projector Screen can be purchased from Selby with free delivery to the Liverpool office. This means that the screen would be successfully implemented into the main meeting room within the six-week instalment period.

The projector screen will too be mounted to the wall of the Liverpool office, where similarly we estimate that this will take approximately 3 hours for instalment, costing $450. This approach best suits the space of the office's largest meeting room where based on the diagram you have provided us, we advise that the screen is attached to the top wall which leaves approximately 0.2m on each side. Although this may seem a small length, that wall will not be used for anything other than to project the display input once a meeting has begun, therefore making it a sufficient length that reasonably fits the room well. In proportion to the employees in the room, if the table which we found was approximately 1.7m long, is centred in the room, there will be approximately 0.75m left on each side of it. This results in the closest person to be around 1m away from the screen and the furthest person to be around 2.5m away, which are relatively fine distances, however if needed, can adjust the eating arrangements of employees based on the number present.

Warranty: The screen comes with a 1-year warranty period, which we feel is sufficient for any problems or errors that may occur during the first year of its use within the office. However, alternative arrangements can be made with the Selby organisation under different circumstances if your company does not feel this is adequate.

Pricing Summary: Selby 90" 16:9 Motorised Retractable Projector Screen

Initial Costs:
- **Installation Cost:**
  o Delivery Fees:
    ▪ $0
  o Personnel Fees:
    ▪ $300
- **Product Costs:**
  o Individual product: $399
- **Total Initial cost:** $699

Total cost: $699

7.2 Projector

Along with the motorised projector screen, it is necessary to integrate an actual projector into the meeting room space. This will allow employees to 'project' their stimulus onto a much larger screen for everyone in the room to see as well as others outside the office through a video call, making all individuals aware of crucial aspects of business projects and campaigns.

We have decided to purchase the 'BenQ MH560 DLP Full HD Multipurpose Projector', as we are positive this device will best suit your company's conference needs in a way that is efficient and effective.

Figure 7: BenQ MH560 Projector

Specifications

The projector entails a variety of features and specifications that are sure to enhance the meeting environment. With an aspect ratio of 16:9, the corresponding employee's laptops will have no problems in mirroring their displays as an identical image along with the matching ratio of the projector screen. It has a high brightness level of 3800 ANSI Lumens alongside a 20,000:1 contrast ratio and 1080p quality to top it all off (BenQ 2022). These characteristics all contribute to a final display that is perfect for each office's meeting room, allowing employees to easily point out features of their potential presentations and viewers to see a clear output of what is being projected.

It uses high quality glass lenses to display images from its input, which are highly effective in minimising chromatic aberration and ensuring long-term image quality in good clarity. Along with this, an anti-dust accumulation sensor is integrated into the device which rejects the accumulation of dust on the lenses, reduces potential maintenance costs whilst ensuring a crystal-clear projection.

An excellent feature of the projector is its lamp life of 15,000 hours, referring to the length of time the device is able to stay powered on projecting an input display. This ensures that employees will definitely be able to conduct their presentations without the worry of potentially being cut off due to battery shortages, once again contributing to the efficiency of our conference meeting solution. Even so, when no input signal is detected after 20

minutes, the projector is automatically turned off, thus saving battery power for use later on. The projector also includes a SmartEco mode that users are able to switch on as a way of saving its lap power up to 70%, lasting for even longer than its standard length.

Security

As this product is not necessarily considered cheap when compared to other office devices, it is very beneficial that the projector implements a Kensington lock for physical security. This reduces the likelihood of theft by parties who may enter the office, as when not in use the projector can be locked, leaving it basically useless until unlocked again.

Input Types

The projector's connection offers a great level of versatility when it comes to the various input sources that may be used, thus leaving no room for error or mishap during meetings. This includes x2 HDMI ports offering dual connectivity where two devices can be displayed at once by switching between sources, which will act as the main

Figure 8: BenQ MH560 Projector Ports (BenQ 2022)

connectivity method as employees will almost always be using their laptops to display what is needed. As soon as a HDMI input is detected, the projector is automatically turned on, leading to further efficiency of use. As well as this, the ports also include:

- USB Type-A which can be used to charge other devices or for dongle support
- VGA for the input of PCs and output to monitors
- RS-232 acting as a central command to projectors
- USB Mini-B to upgrade the devices firmware, allowing its hardware to function with the software of various other devices
- S-Video, however this will most likely not be used due to the prevalence of HDMI in the office space
- Video and Audio Input/Output, where once again will most likely not be used due to the prevalence of HDMI for display and the microphone for sound which we will delve into later on

Modes

Focusing on the actual software of the projector, a variety of modes are available for different uses, increasing the versatility of this excellent device. The most standard is presentation mode which will generally be used when discussing matters in a presentation format where one employee speaks about a project or issue to the others. As your company is based around marketing, we are aware that graphic design must be a significant aspect of your jobs which can be perfectly coupled with the infographic mode. This allows employees to showcase their work with high brightness and colour graduation to pitch an idea or solution most effectively to their fellow workers or clients. Finally, the data review mode is a great way to focus on team analysis and evaluation, which utilises graphs and charts to assess past statistics and goals, and develop future company strategies.

A remote control is also included in the box, which makes navigation of the projector that much easier and efficient. More specifically, it will allow users to effortlessly change between input sources and what is being projected, while also varying the display modes depending on the subject or focus of the meeting and its requirements.

In terms of the projector's placement inside each office, the Wollongong and Liverpool branches are quite similar other than the size of the largest meeting rooms. We are suggesting two potential options of where the projector will be kept, allowing you to make the decision that best suits your company's conference needs.

7.2.1 Mounting Options

On Table:

The first option is to set up the projector in a fixed position towards the back of the large table facing the rolling screen. The main connection process for both offices will involve one of the employees laptops being connected to the projector through a HDMI cable and port on the table. This display then projects onto the screen allowing the presentation to occur. After our analysis of each room based on the diagrams you have supplied to us we have concluded the best positions for the projectors to be placed for optimal viewing and display according to the developed throw distance chart with a throw ratio of 1.49-1.64:1 (JustProjectors 2022). For the Wollongong office, the projector should be approximately 5.0m - 5.4m away from the screen due to its larger size. For the Liverpool office, the projector should be approximately 3.0m - 3.3m away from the screen due to its smaller size.

Ceiling Mounted:

The second option is to attach the projector to the ceiling in a fixed position towards the back of the room facing the rolling screen using an additional mount costing $149 each. In this case for both offices, the projector will be flipped upside down as the screws on its bottom allow the mounting process to occur, which based on the costs of installation from the documents that have been provided to us, will cost $150 for only 1 hour of mounting. Similarly we have concluded the best positions for the projectors to be placed for optimal viewing and display according to the developed throw distance chart with a throw ratio of 1.49-1.64:1 (JustProjectors 2022). For the Wollongong office, the projector should be approximately 5.0m - 5.4m away from the screen due to its larger size. For the Liverpool office, the projector should be approximately 3.0m - 3.3m away from the screen due to its smaller size.

Installation
The BenQ MH560 DLP Full HD Multipurpose Projector can be purchased from Just Projectors with delivery fee of $44 to both the Wollongong and Liverpool offices. This means that the projector would be successfully implemented into the main meeting room within the six-week instalment period.

The projectors will be configured by professionals to prepare it for your company's use, which will take approximately 1 hour of working time, costing $300 for both offices. We as an organisation recommend that you use the projector on the meeting room table in a permanent position, mainly due to the fact that it will be much more efficient and easier to connect input sources through the cable ports while also being able to use them while being displayed, instead of having them in a fixed position connected to the projector on a ceiling through a cable running along the walls. However, regardless of your decision, the projector has a retractable foot on its bottom that allows for the adjustment to specific heights and angles that best fit the office environment. Not only this, but also the auto vertical keystone that is equipped on the device contributes to perfect alignment from any angle whilst eliminating any signs of blurriness, thus displaying the best possible image for all viewers.

Warranty: The projector comes with a 2-year warranty period, while also offering an additional 1-year warranty for $85 on top of that, which we have decided to purchase. This will allow any problems or damages to be solved and repaired during the first major period of the projector's use in both offices.

Pricing Summary: BenQ MH560 DLP Full HD Multipurpose Projector

Initial Costs:
- **Installation Cost:**
    - Delivery Fees:
        - $44
    - Personnel Fees (for both offices):
        - $300
- **Product Costs:**
    - Individual product: $929
    - Extra 1-year warranty: $85
- **Total Initial cost:** $2072

Total cost: $2072

7.3 Hub, Camera, Microphone and Speaker

On their own, the projector and motorised screen are only beneficial for meetings that involve only employees at the office that can speak to each other directly. However, in order to communicate with the other offices in Wollongong and Liverpool, as well as contact various clients and partners, the use of Microsoft Teams as a video conferencing software is required along with a camera and microphone source to see and hear the other individuals. Therefore, we have included this as part of our solution that allows the entire meeting room and those in it to be seen and heard by those they are communicating with, thus resulting in a functioning video conference.

We have chosen the 'Logitech Group' as a USB Video Conferencing System that features a camera, microphone, and speakerphone to make your meetings the most efficient they can be as a way of improving productivity and results for your company. It consists of three main parts: the hub, the camera, and the speakerphone (Logitech 2022), which each contribute to an effortless conferencing experience for all users on both ends of the call.

Figure 9: Logitech Group (Logitech 2022)

7.3.1 Hub:

The hub is the main part of the entire system, acting as a source of power for the other components. It functions through a cable connecting a power outlet to the hub where multiple cables then branch off to every other device in the network:

- A cable connecting to the camera
- A cable connecting to the speakerphone
- A cable connecting to your laptop or PC

7.3.2 Camera:

The camera allows the employees in the office's meeting room to be seen by the others on the call. It offers HD 1080p video quality at 30fps (frames per second), which helps create a more fluent and smooth output to those on call, with a 90-degree field of view so everyone at the table is able to easily be seen. It also has the ability to zoom in or out and pan up to 260 degrees left and right so the camera can focus other parts of the meeting room when

necessary, such as panning the camera to a whiteboard on the side of the room with diagrams relating to particular projects. As well as this, the camera has a 130-degree tilt feature to get the best angle of the room depending on the number of employees present and what is required to be showcased. For an even larger improvement in efficiency, there are five potential presets to use, where employees can set the angle and zoom to focus on different sections of the room and then save them as a preset. This allows them to seamlessly switch between various visuals and parts of the room, resulting in no interruptions to the meeting itself.

7.3.3 Speakerphone (Microphone and Speaker):

The speakerphone is responsible for outputting sound from the other end of the call and inputting audio from your end of the call. The microphone has a pickup range of 6m, so we recommend placing the speakerphone in the centre of the table for easy access to all employees, allowing everyone to be heard and hear the call itself. Not only this, but the speakerphone can also control every aspect of the conferencing network. This is through a remote control, stored in the speakerphone for convenience or held for mobility, that is able to adjust the state of the camera and its own audio input and output. Specifically, this involves panning, tilting, and zooming the camera, as well as increasing or decreasing the volume or the speaker and microphone, which all contribute to a conferencing environment that best suits your company's needs.

There is also the opportunity to add expansion microphones for $539 that extend the audio range to 8.5m for a larger room so all employees can be heard. However, we as an organisation have concluded this is not necessary for your company, as Logitech claims that the device is suitable for a maximum of 8 people, making it sufficient for the number of employees and size of your meeting rooms.

Installation

The Logitech Group can be purchased from Video Conferencing Australia with free delivery to both the Wollongong and Liverpool offices. This means that the device would be successfully implemented into the main meeting room within the six-week instalment period.

The device will be configured by professionals to prepare it for your company's use, which will take approximately 1 hour of working time, costing $300 for both offices. This will involve

setting it up in each office with the cables running to each potential device and projector, while also teaching your employees how to do this themselves for company use in the future.

Warranty: The Logitech Group comes with a 2-year warranty period, which although does not comply with your company's 3 to 5-year recommendation, will effectively allow for any replacements and repairs as your employees become familiar with the device.

Pricing Summary: Logitech Group

Initial Costs:
- **Installation Cost:**
    - Delivery Fees:
        - $0
    - Personnel Fees (for both offices):
        - $300
- **Product Costs:**
    - Individual product: $1799
- **Total Initial cost:** $3598

Total cost: $3598

7.4 Presentation Remote

Although the presentations can be navigated using the employee's laptop itself, we have implemented a more efficient solution for navigation. This is through a wireless presentation remote that allows users to easily navigate through their presentations on the projector screen with the additional ability to point out specific parts to their viewers, thus increasing the mobility of presenters through a portable solution, rather than staying near their laptop and solely using that.

The remote we have decided on is the 'R500s Laser Presentation Remote', a product created by Logitech that we are confident has the potential to provide many benefits to the meeting environment and contribute to endless positive results for your company as a whole.

Functionality

It has three main buttons that each play a key role in presentation navigation (Logitech 2022). The largest and most prominent button on the remote is the 'Next' button signified by an arrow pointing to the right, which is responsible for proceeding onto the next slide in a presentation. The 'Previous' button is represented by an arrow pointing to left which as you can assume allows the user to go back a slide in a presentation. Finally, the 'Laser' button with a red dot activates the built-in red laser pointer that makes it possible to focus and target specific parts of the presentation, where for example, an employee may point out a particular slogan or graphic in a marketing design for one of their clients.

Figure 10: R500s Laser Presentation Remote (Logitech 2022)

Software

Logitech also provides a downloadable software for the presentation remote which has the option to utilise various features for the user's needs while keeping the projected device awake for the entire duration of the meeting. This software includes the customisation of each button, for instance, holding the next button to start the presentation. It can also monitor the battery life of the remote so users are aware of when it needs to be charged, and the ability to set on-screen timers is included for potential exercises and deadlines during a meeting.

Range

It has a 20m range that the remote can connect to the displaying device from. Due to the sizes of meeting rooms in both Wollongong and Liverpool being much smaller than this range, this will ensure that the remote is always working, in turn preserving a smooth presentation.

The remote can connect to the displayed device through either Bluetooth or a USB receiver. With Bluetooth, there is no need to plug anything into the device which improves the efficiency of the process as the user can immediately begin presenting after a connection is established. With the USB receiver that is kept inside the remote itself when not in use, the user is required to plug it into the device and follow the prompts prior to beginning their presentation, which improves efficiency in another sense as the USB can be kept in the user's laptop device when not in use, requiring no start up process at another time later on. However, since the remote will be used on various employee laptops, we recommend using Bluetooth as it involves the most effortless transfer to connect and disconnect from each device onto another.

Installation

The R500s Laser Presentation Remote can be purchased from Logitech with a 4-7 day delivery fee of $17.48 to both the Wollongong and Liverpool offices. This means that the remote would be successfully implemented into the main meeting room within the six-week instalment period.

We recommend following the instructions that are included in the product box to best install and activate the presentation remote in a timely and effective manner.

Warranty: The remote comes with a 1-year warranty period, which is a sufficient amount of time for a device as small and technically simple as this, where if need be, can be replaced or repaired during its first year of use.

Pricing Summary: R500s Laser Presentation Remote

Initial Costs:

- **Installation Cost:**
    - Delivery Fees:
        - $17.48
    - Personnel Fees (for both offices):
        - N/A
- **Product Costs:**
    - Individual product: $79.95
- **Total Initial cost:** $177.38

Total cost: $177.38

8. Security

As discussed in the 'Office 365' subsection of the 'Software' in our network solutions, the inclusion of Office apps namely OneDrive is central to our solution. OneDrive is a Microsoft cloud storage service that will allow your employees to access, share, and collaborate on business files over the Internet. It also allows employees to work offline with documents that they specify, offering robustness to our solution. However, the real benefit of our recommendation emerges in terms of security as well.

Through the use of SharePoint, all of an employee's files will be stored in one central location. This allows the location to be kept securely and with simplicity for employees, especially through the protection of each employee's login to Microsoft Teams. Moreover, SharePoint applies robust AES-256 military-grade encryption technology to data at rest and in-transit. As mentioned, Encryption refers to the process of converting information into code that is unreadable by malicious attackers, thus protecting the data. AES is an acronym for Advanced Encryption Standard, developed to provide the highest level of security and used by agencies such as The National Security Agency (NSA) ("What Is AES Encryption, and Why Is It Important?", 2021). This highlights the industry-level encryption method that will secure your files with our solution. The encryption of data at rest and in-transit will protect the files shared and stored between the Wollongong and Liverpool office.

OneDrive Security Features Bolstering Our Solution:
- AES-256 military-grade encryption technology to data at rest and in transit
- Virus scanning on download for known threats
- Suspicious activity monitoring
- Ransomware detection and restoration of files
- Version history
- Password protected and sharing links with an expiration
- Mass file deletion and restoration of files

Additionally, the combination of Microsoft Exchange hosted in the Outlook application will work to secure the electronic email (email) communication between employees with encryption, as well as Safe Attachments and Links, antiphishing (filter emails pretending to be from reputable sources), antispam, antimalware and spoof intelligence (verify the identity of users sending emails). Moreover, Microsoft Teams offers an Instant Messaging platform which offers end-to-end encryption. This means that messages and conferencing data will be encrypted while in-transit between the offices and with clients, and will also be encrypted in terms of storage on both the sender and receivers device.

8.1 Network Security

1. **Virtual Private Network (VPN)**

We also advise the use of a Virtual Private Network (VPN). A remote access virtual private network (VPN) encrypts all traffic that your employees send and receive in relation to your office network. This encryption creates a 'tunnel' between your organisations' network and the remote user, whereby the transmission of encoded data means that eavesdroppers cannot understand the data. This is essential to secure the data that your employee's will send to your network, because this connection runs over the public Internet it can be intercepted. The VPN will also be able to create a secure tunnel between your Wollongong and Liverpool offices. Our selection of the Draytek Vigor2866Vac will allow your business to leverage VPN. Through correct configuration on each of the employee laptops, employees will be able to connect to the VPN when they are working remotely. This will offer another layer of encryption to the AES-256 encryption offered by OneDrive.

There are two basic structures of a VPN to connect secure SMART Company's network: LAN to LAN VPN, and Remote Dial-in or Remote Access VPNs.

LAN to LAN VPN: Used to connect multiple computers or devices to a main network. For instance, connecting the Liverpool branch office to the head office in Wollongong. LAN to LAN VPNs require the use of routers at both ends which support LAN to LAN VPNs. However, as our solution leverages the security, flexibility and performance of 'the cloud', namely Microsoft Cloud, as opposed to physical servers, a Remote Access VPN can be used on both sites. This is elaborated in the following segment, but effectively an employee from the Wollongong Office will communicate with the Microsoft Cloud, whereby an employee in the Liverpool office can retrieve the data from the Microsoft Cloud. In this way, there is minimal benefit of installing a tunnel between the two offices.

Remote Access/Dial-in VPN: Each of your employees can remotely access, or 'dial-in', to your corporations network using the VPN. The connection from the remote device, such as each employee's laptops, will be made using a software VPN client for instance DrayTek's free Smart VPN client. The receiving or server end, your office, will require a VPN server or a router which supports Remove Access/Dial-in VPNs. In this way, the traffic from employee devices to the modem/router in the office will be encrypted, then the data from the

modem/router to the Microsoft Cloud will be encrypted and sent through another tunnel to the Microsoft servers.

Split-Tunnel Configuration

"Microsoft recommends that the key Microsoft 365 scenarios Microsoft Teams, SharePoint Online, and Exchange Online are routed over a VPN split tunnel configuration".

Split tunnelling refers to using a VPN and encrypting data for only some of your employees traffic. The primary advantage of using split tunnelling is it conserves bandwidth as not all of the Internet traffic has to pass through the VPN server. Split Tunnelling can be configured easily, whereby specific applications or URLs can be allocated to the VPN tunnel and other activities to the unencrypted Internet.
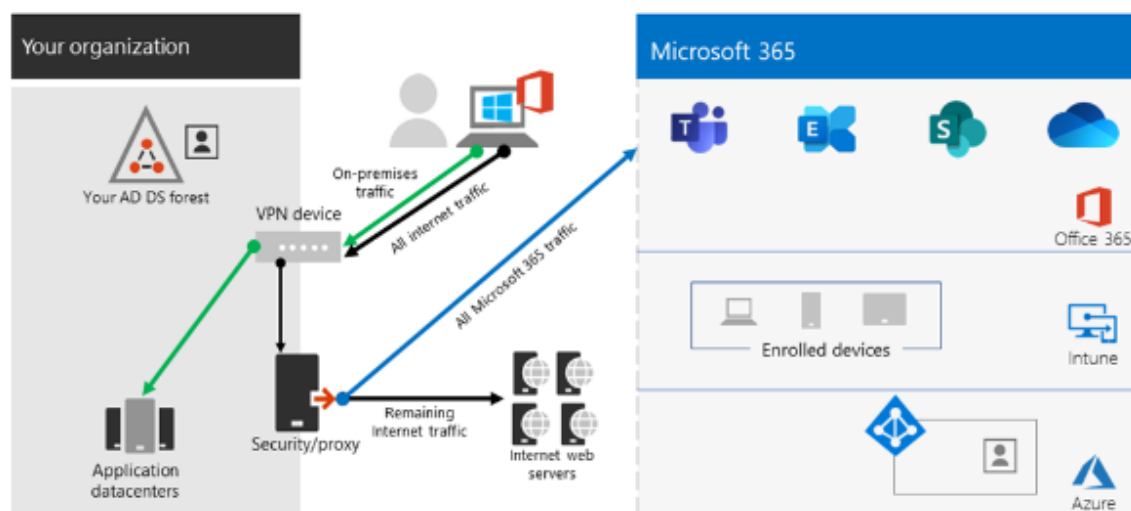
Figure 2: A common VPN solution for remote users where all traffic is forced back into the corporate network regardless of destination

However, as your business' computers are intended to be solely used for business work, supported by Microsoft Intune, we have deduced that full tunnelling is the most effective option. Therefore, no additional configuration will be required. However, we have drawn from the above VPN layout. In summary, in order to support security in your working from home model, as well as unify your Liverpool and Wollongong offices, it is thus deduced that the Remote Access VPN is most suitable for your employees who will have a variety of routers at their home that will likely not be VPN-compatible. Further, full tunnelling will secure all business-related operations that your employees complete by directing traffic through the corporate DrayTek modem/router, offering you system superior security with two layers of encryption and further securing the transfer of your work files.

Installation

Configuring the VPN

1. Log in to the DrayTek Router Configuration Page

    a. Ensure that the router is connected to the Internet and has a public IP address so that your employee's computers can access it. This is the advantage of having a static IP address which was a feature of the Aussie Broadband Internet plan

    b. Turn on the SSL VPN Service (Network protection offered by the DrayTek Router's VPN)

    c. Create a 'Remote Dial-In User' profile for each of your employees. A profile consists of a username and a password.

    d. *(Estimated time: 120 minutes assuming 12 users must be created for each employee in the Liverpool and Wollongong offices).*

2. Download the SmartVPN Client on each of the employee's laptops and mobile phones.

    a. Click 'Add' to create a VPN profile on the employee's specific device

    b. Enter a custom name for the profile

    c. Select 'SSL VPN Tunnel' in the type of the new profile. This aligns with the SSL security of the VPN connection provided with the router.

    d. Enter the router's public IP address into the IP entry field

    e. Enter the username and password that should be delegated to each employee. This was created while configuring the router itself (in the previous step)

    f. Enable 'Fast SSL' to optimise the VPN connection

    g. Now the new employee profile has been created, select the VPN profile and toggle on 'Connect'. Once more, enter the username and password. By downloading and configuring the SmartVPN Client on employee devices before giving them the device, this will be a streamlined task.

    h. *(Estimated time: 180 minutes assuming the 12 mobile phones and 12 laptops install, configure and test the SmartVPN Client).*

As seen above, the process of configuring the VPN is not overly technical providing that a SMART Company employee follows each step, and no complex or erroneous events occur. If SMART Company would like to begin by enlisting a network expert for safety, whereby maintenance or future installations could be assisted by an employee overseeing the task.

-   Given that there are 12 profiles to be made for each employee, and the VPN among the other VPN configuration to be made, our organisation estimates around 5 hours for a Network Technician.

2. Secure Sockets Layer (SSL) VPN

A number of protocols (define rules for communication) can be used to create the secure encrypted tunnel between your employee's computer and Microsoft 365 resources. SSL VPNs arose as a response to the complexity of the Internet Protocol security (IPsec) and the inflexibility to support all devices and users, particularly for remote workers. SSL is the protocol used by in web browsers for accessing 'secure' web sites (refer to the Website section). Therefore, due to the integration of SSL in web page traffic, SSL is supported by all web browsers and all hotspots and other public Internet will always allow SSL to pass properly. This offers high security as well as flexibility to your employees.

Although this web-based protocol means that there are options for employee's to connect through SSL to the corporate DrayTek router/modem, we recommend the configuration method used above and the continued use of the SmartVPN Client to simplify use for your employees, as they will not need to recall a URL.

3. Fibre optic

Fibre optic cable is thin glass cable surrounded by plastic coating and packaged into an insulated cable. Fibre optic is the transmission of pulses of light down the fibre optic cable. Due to the reduction in the signal of the light that will occur if data is being eavesdropped before arriving at your office, fibre optic is able to detect data infiltrated. Fibre To The Premises (FTTP) is use of fibre optic cable to deliver Internet access directly to your premise, or office, from an Internet service provider (ISP). Namely, our suggested ISP Aussie

Broadband supports this transmission method to both your Wollongong and Liverpool. Thus, this transmission medium greatly enhances the security and robustness of our solution.

4. IEEE 802.11

Because wireless routers could allow any compatible laptop or other device to connect to the corporate network, it is difficult to control access to company users. IEEE 802.11 however refers to a set of technical standards by the Institute of Electrical and Electronics Engineers (IEEE) that defines communications between permitted workstations and the router. Wireless Fidelity (Wi-Fi) is a set of protocols supporting the IEEE 802.11 family of technologies. New advancements for IEEE 802 has allowed for greater data capacity, defined by a one or two letter suffix. 802.11b was the first advanced generation released in 1999, and 802.11ac released in 2013 is the newest and fastest standard.

8.2 Endpoint Security

It is important to note that VPNs do not function as a comprehensive anti-virus software for your employee's devices. While they will protect the IP address of your employee's devices and encrypt their internet activity, a VPN connection will not protect their computer from outside intrusion. To do this, it is essential that an anti-virus software is considered in the new system, because using a VPN on its own will not protect your employees devices from viruses or other malware that manages to infiltrate their device. The largest concern that this targets is that an employee's compromised device could provide access to Office 365 and the data stored on your OneDrive cloud.

Endpoints refer to the devices that serve as the end of the network connection. In terms of your current infrastructure, endpoints include the laptops and smartphones at each employee's workstation. Endpoint Security Software (ESS) are designed to protect the endpoint hardware itself, as well as threats the endpoint can cause on the business network it operates on. Unlike commercial anti-virus software, enterprise-oriented security solutions allow admins to manage all devices from a central dashboard. This allows admins to easily respond to security incidents and threats for each workplace device.

There are two typical classifications of Endpoint Security Solutions:

Endpoint Protection Platforms (EPP): These are security solutions designed to detect and block threats at a device level, including traditional protection features such as antiviruses and firewalls. They can add some additional features, such as machine learning, generally though, they rely on a database of known malware (malicious software) to routinely detect threats. EPP is useful for identifying vulnerabilities and preventing attacks, however it is difficult to remove active threats that pass the endpoints and threaten your network.

Endpoint Detect and Response (EDR): Contrastingly, EDR platforms combine elements of antivirus with the advanced newest tools such as Artificial Intelligence, machine learning and threat intelligence to actively neutralise attacks. Whereas EPP protects the endpoint from known attacks, EDR analyses data from endpoints across the network to stop an active attack then trace the source of the attack to prevent damage in the future. EDR takes a more proactive approach to diminish network attacks.

We have concluded that a combination of EPP and EDR technologies will offer your firm a multilayered security solution most effective in the modern cyber threat climate.

To combat the dangers of unsecured endpoints, we advise the integration of Microsoft Defender for Business, which is integrated into the Microsoft 365 Business Premium plan. Defender for Business is an ESS that was designed especially for small-medium-sized business, (up to 300 employees). Your company's devices are protected from ransomware, malware, phishing, and other more intelligent threats. It combines EPP and EDR technologies into an intuitive dashboard, where through training and familiarisation, an internal employee of SMART Company could manage and overlook the system.

Features include:
- **Cross Platform Integration:** Defender for Business works with built-in Windows components, and with applications that can be installed on Android devices. This allows a variety of workstation devices to be monitored in a central location.
- **Microsoft Defender for Office 365:** This is a central component to the security of our solution, securing your business' files that are stored in the Microsoft Cloud. Services include scanning emails for safe attachments, safe links and antiphishing (filtering files pretending to be from reputable sources to trick employees into revealing personal information)
- **Integration with Exchange Online Protection:** Security for the employees email clients with services including antiphishing (filter emails pretending to be from reputable sources to trick employees into revealing personal information), antispam, antimalware and spoof intelligence (verify the identity of users sending emails)
- **Integration with Android Microsoft Defender for Endpoint:** Microsoft Defender for Endpoint supports devices that are enrolled into the Intune Mobile Device Management (MDM) – expanded in the following segment. In this way, employees mobile phone's are also equipped with the antivirus software and can be monitored in the central dashboard. This is critical as work phones will have access to the Android version of Microsoft Teams, SharePoint and Exchange, as well as other apps.
- **Enterprise-grade endpoint protection:** Deploy security across SMART Company's devices and employ Microsoft's automated tools to rapidly protect, detect, and respond to threats.
- **Simple setup and ongoing use:** Extremely relevant to reducing the cost for hiring security specialists. In this way, administrator employee's or where applicable could be easily trained and quickly become comfortable with the software and ongoing maintenance of your devices.
- **Centralised management in the Microsoft 365 Defender Portal:** Manage and review the security of connected company devices, supported by visuals such as

diagrams that represent the status of each company mobile phone and laptop in real-time

- **Endpoint Detect and Response (EDR):** In addition to the system Endpoint Protection Platform (EPP) solution monitored through the centralised dashboard, using tools such as Artificial Intelligence to detect suspicious behaviour when a devices past patterns of use change. Managers are able to administrate the following response actions:
  - o Run an antivirus scan
  - o Isolate the device from the network
  - o Quarantine a file from entering SMART Company's Cloud storage
  - o Add a rule to block or allow future files
- **Network protection and web blocking:** Protect your organisation's devices from web threats.

As mentioned, Microsoft has catered for a refined set-up Wizard and configuration system, allowing your organisation to have greater control, and understanding over your protocols. The setup wizard is designed to help any user set up and configure Defender for Business quickly and efficiently, with four general steps detailed below. In this way, it is the best business decision that an employee or multiple employees could be trained to install and manage Windows Defender for Business. Given that Microsoft 365 is an extremely large and popular system, there are numerous online articles and videos especially from Microsoft 365 and composed by other users. Training employee's from the beginning may be time consuming, however it will reduce further costs and empower your employees to feel involved in the new system. In the future when your business expands, it may become economical to hire a security team, in which case Defender for Business offers three roles: A global admin (full access), a Security Administrator (edit settings and take action in the case of threats), and a Security Reader (monitor reports but cannot take threat action).

Installation

Configuration:

Below are the four configuration steps of Defender for business. Microsoft is known for creating products that are professional and epitomise the user perspective.

1. Assign user permissions to your security team. In this case, we advise an employee of SMART Company likely an administrator be trained using Defender for Business documentation. This will offer SMART Company a great amount of control and is a suitable scale for its current smaller-size.

a. *(Estimated time: 10 minutes depending on the number of administrators).*

2. Set up email notifications to alert your company if a vulnerability is found, meaning that administrator's can still attend to normal office work.

    a. *(Estimated time: 10 minutes depending on the number of administrators).*

3. Onboard (connect) and configure devices to be protected by Defender for business

    a. Given our recommendation of Intune to manage the employee's laptop and mobile devices, this endpoint security will automatically integrate into devices that you have connect.

    b. *(Estimated time: 60 minutes to onboard 12 mobile phones and 12 laptops).* However, it is likely that they will already be onboarded into Microsoft Intune).

4. Configure Microsoft's pre-made security policies with recommended settings such as firewall protection and EDR technologies (such as behavioural analysis). Custom security policies can also be made, however given the scope of the endpoint protection these industry-advised settings will be suitable.

    a. *(Estimated time: 20 minutes assuming default Microsoft recommendations).*

Pricing Summary: End point security Defender for business.

Initial Costs:

      Installation cost: 1.6 hours for an employee at $150/hour

Total Cost:$250

8.3 Mobile Device Management

Contrastingly to Endpoint Security Software, Mobile Device Management (MDM) software will offer your employees safety while operating in the workplace. MDM software includes protection such as restricting applications that are not related to SMART Company, and creating a professional environment on work devices to be used solely in the office. This will greatly benefit your employees by allowing them to distinguish the work environment and out-of-work time, relevant in remote working situations.

Through our research, we recommend the use of on our concluded laptop set up, so that employees can improve productivity and safety in the office and at home. Additionally, we recommend the use of Employee Monitoring Software on our mobile phones so that employees can improve productivity and safety in the office and at home. This can primarily be achieved through the whitelisting of work-related apps. This is achieved with a Mobile Device Management (MDM). MDM is a centralised tool for managing multiple mobile devices. Our solution has recommended the Android Samsung Galaxy A13 for your employee's phones. Thus, the Android MDM will allow administrators to monitor, manage and secure work mobile phones.

As your business moves to benefit from hybrid and remote workforces, challenges arise in managing and protecting the different devices that access organisation resources. Microsoft Intune, which is included in the Microsoft 365 Business Premium plan that we recommended, is a cloud-based application that manages your organisation-owned devices namely the mobile phones and laptops in a centralised intuitive dashboard. In this way,

Features include:
- **App Management:** built-in app experience, including app deployment, updates, and removal. You can connect to and distribute apps from your private app stores, enable Microsoft 365 apps, deploy Win32 apps, create app protection policies, and manage access to apps and their data.
- **Integration with Microsoft Defender for Endpoint**, focusing on security for your endpoints (employee mobile phones and laptops) through response to threats, real-time risk analysis, and automated recovery.
- **Web-based admin centre** that can be accessed from any device connected to the Internet, including features such as data-driven reporting.

- **Integration with Microsoft 365** which is well-considered due to our choice of Microsoft 365 Business Plan. This will boost employee productivity as Intune will allow you to deploy apps such as OneDrive and Outlook to in your organisation.
- **Support for Mobile Device Management (MDM):** Intune enables your devices to be fully managed, including the users that sign in, the apps that are installed on the devices, and the data that is accessed. This is conducted by 'enrolling' organisation-owned devices.
- **Support for Mobile Application Management (MAM):** MAM is the focus on secure access to apps and protecting the data within the apps.
- **Integration with Windows Hello for Business:** Additional endpoint security by replacing endpoint passwords with a PIN code or biometrics such as fingerprint or facial recognition. This information in stored locally on the affected device, further increasing security.
- **Integration with VPN profiles:** Assign VPN settings to users and devices in your organization. Use these settings so users can easily and securely connect to your organizational network.

Note, as Intune is used on organisation assigned devices, MDM (Mobile Device Management) is utilised to manage all aspects of the device. This also allows the enforcement of specific security and encryption protocols, Contrastingly, MAM is typically used when employees bring their own device, allowing applications with corporate data to be managed as opposed to the entire device.

Installation
1. Sign into the Intune Admin portal known as Microsoft Endpoint Manager
2. Configure the custom organisation domain. In this case, through the purchase of the domain 'thesmartcompany.com.au' from GoDaddy (detailed in the Website section), the integration of GoDaddy with Microsoft 365 means that once you log into the GoDaddy portal configuration will immediately occur.
3. Add accounts for your 12 employees. These accounts can be used on an employees mobile phone and laptop. Details such as first name, last name, display name, username and password (used to access their portal) is given.
   o Assign user roles as well. Visiting the separate Manage Roles panel will allow the installer to set specific permitted activities.
4. Assign Intune licences. With Microsoft 365 Business Premium, licences for 300 users are included by default.

5. Give Mobile Device Management (MDM) authority on the devices for Intune to manage them. This may require up to eight hours for the device to sync.
6. Add permitted applications for each group of devices. This is permitted for Microsoft store apps, Microsoft 365 apps, Android store apps and other executable apps.
7. Specify device-wide features such as:
    o Activating Microsoft Defender for Endpoint (previous section)
        ▪ Also configure BitLocker (mentioned in the Additional Security Practices section. This will encrypt the physical data stores on Windows) and Windows Defender
    o Device restrictions, for instance employee's cannot use an Android or Windows 11 device camera
    o Enforce the use of VPN through VPN profiles so users can quickly connect to the network
    o Enforce the use of Wi-Fi through WiFi profiles so that your employees can access the corporate router easy when they are in the office
    o Windows 11 settings (for instance a password must be required)
    o Load exchange email settings to reduce employee set-up
8. Enrol the corporate-owned devices by installing the Intune Company Portal application from the Android Playstore and the Windows Store. Once the device has installed the application, enrolment can be prompted by signing in to the Company Portal with the accounts created in Step 3. Microsoft Intune automatically marks certain devices as corporate-owned. This classification will allow SMART Company to manage your devices with more control and access.
9. Application protection policy: Focuses on our offer of security in your solution. Applications can be configured to require a PIN to access and will encrypt any stored information. This can also prevent company data transferring from one application being used in another, applying restrictions such as save-as and use of the clipboard.
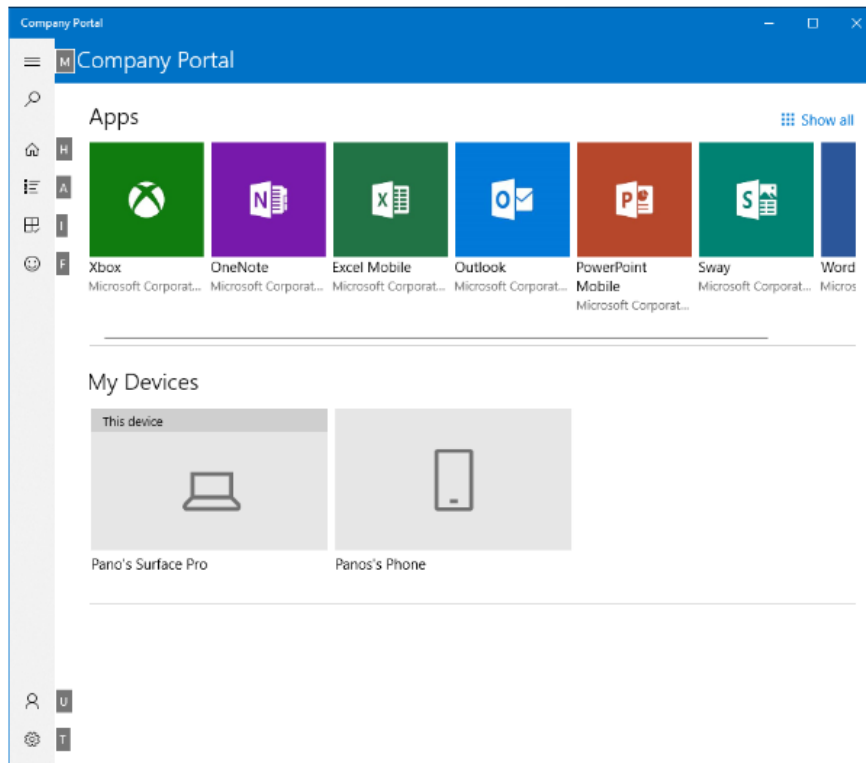
Figure 11 Intune Company Portal Interface (Microsoft 2020)

Therefore, through using an MDM solution on your corporate Android mobile phones and the laptops, Intune can support the security of your devices for employees allowing them to work in a professional and efficient environment. This includes their own privacy and security, with password rules, as well as a list of applications that are relevant to the work that they conduct for SMART Company. Hence, the reliability, quality, and professionalism of your company will be greatly increased.

8.4 Security Practices

The following section details additional security procedures that SMART Company can implement using our solution, to enhance their security.

- As mentioned, our recommendation of Microsoft Teams and SharePoint will greatly protect the files and messages between your employees. Microsoft offers a login function, which will offer the opportunity for a secure password. This should be bolstered through the use of 2-Factor Authorisation (2FA) also referred to as two-step verification. 2FA is a process which uses supply two steps to authenticate a user. Most frequently, this is achieved through receiving a code through on a phone application such as Google Authenticator or LastPass. This extra layer of security is extremely effective, a 2019 report from Microsoft conclusion that 2FA blocks 99.9% of automated attacks (Bott, 2022). 2FA through a form of authentication could easily be achieved through installing the application on employee's work phones, or sending a message which contains the identifying code to the employees number.

- Specifically, Microsoft Teams offers a teams-management panel that includes an option for '2-Factor-Authentication enforcement. This will ensure that all of your employees protect their accounts with two steps. Additionally, Microsoft Teams offers an administration option to enforce a 'password policy' This improves password security by specifying a length and other password rules such as a mix of uppercase and lowercase letters.

- Windows offers settings to improve security on each employee's workstation laptops. Important settings to change are the automatic 'lock down' of a computer after a certain level of inactivity, and the requirement of a password once a computer wakes back up. This is important in the case an employee working from home leaves their computer unintentionally unsupervised. In this way, security will be improved by automatically locking their profile, and requiring a password to log back into the computer.

- Windows also offers a built-in disk encryption tool known as BitLocker. This means that all files stored on the disk of the computer is encoded and stored with a key for decryption. This particularly improves the security of offline OneDrive files which are stored locally on the user's computer.

- Additionally, the use of Phishing Awareness Training programs which send fake phishing emails to train employees to be wary of clicking links in emails and Microsoft Teams messages will enhance internal security. These courses are offered by organisations such as Phriendly Phishing and Phish Threat. Services include automatically enrolling an employee in training if they click on a simulated attack.

- Interestingly to note, our solution improves its security by not recommending the mandate of a monthly password-reset for all employees. This is because it is common for employees to add numbers to the end of the original strong password, or eventually have only weaker passwords because they cannot recall a strong password that they may have memorised the month prior.

9. Marketing

9.1 Printer/Photocopier

For your professional advertising services and campaigns for clients and their business needs our company has the following printer options that could fit your needs on a budget. Given that you print an estimated 5000 pages per day, it is essential that an effective printer is selected.

9.1.1 Printer

Epson EcoTank 4-in-1 Wireless

The Epson printer 4-in-1 Wireless printer produces vibrant borderless prints at 8.5 x 14 dimensions. Each replacement ink included can print up to 6,000 pages. The ink costs $27.86 per cartridge.

Much like the current but faulty all-in-one printer unit the Wollongong office currently has, purchasing this printer would offer similar capabilities in an improved format. It has the flexibility of being able to scan, photocopy, fax, and print, thus dramatically increasing the productivity of your company. The printer has a fast Cartridge-Free Printing feature with easy-to-fill supersized ink tanks. It can save up to 80 percent of ink with low-cost replacement ink bottles.

Figure 12: Epson Ecotank(epson.com)

The printer has a 500-sheet front tray paper capacity and rear specialty-paper feed option. A 10.9-cm colour touchscreen and hands-free voice-activated printing makes this printer easy to use for your entire office. The prints also dry instantly, allowing your employees to handle the print carefree and use it as quickly as they need. Additionally, the use of Heat-Free Technology delivers high-volume, print-shop-quality output.

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Pricing Summary: Epson Ecotank Printer

Initial Costs:

- **Installation Cost:**
    - Delivery Fees: Free Delivery
    - Personnel Fees:
        - Printer technician (30 mins for configuration of the printer at Liverpool and Wollongong): $150
- **Product Costs:**
    - Individual product: $999.99
    - Total product fees (one for the Wollongong and Liverpool office): $1999.89
- **Total Initial cost:** $2149.89

Maintenance Costs: none

- **Total Recurring cost:** $27.86
- **For two printer :**$730

Total cost: $2879.89

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Epson Expression Premium ET-7700

The Epson Expression Premium printer comes with a Hi-speed USB 2.0 Wi-Fi, Wi-Fi direct and Ethernet.

The printer comes with up to 2 years of ink included in the box, enough to print documents up to 14,000 pages black and 9,000 colour; this is equivalent to about 30 ink cartridge sets. The company can save up to 80 percent on ink with replacement bottles, plus the printer has an easy to fill,

Figure 13: Epson Premium (epson.com)

supersized ink tank great for printing. The printer has 5 colour ink which helps in printing vibrant and high-quality documents and A4 paper dimensions.

The Wireless feature allows the employees to print files without moving an inch. But the high initial cost must be considered here. Since the company requires 2 printers for both the Wollongong office and Liverpool office, the cost would be just for the printer without calculating the paper required and maintenance calculated.

This printer needs paper to be fed in manually which could delay the printing process.

Pricing Summary: Epson Ecotank Premium Printer

Initial Costs:
- **Installation Cost:**
    - Delivery Fees: Free Delivery
    - Personnel Fees:
        - Printer technician (30 mins for configuration of the printer at Liverpool and Wollongong): $150
- **Product Costs:**
    - Individual product: $898.88
    - Total product fees (one for the Wollongong and Liverpool office): $
- **Total Initial cost:** $1797.76

Maintenance Costs: none
- **Total Recurring cost:** $27.86
- **For two printer :**$730

Total cost: $2677.76

Printer Installation

Both of the aforementioned printers support wireless connection to the router. As mentioned in the router section, the router allows local devices to connect and communicate with each other. In this way, employees could easy send documents to the work printer providing they are connected to the office Wi-Fi (router).

Overall, through our research we have deduced that the printer has no installation costs. Firstly, an employee for instance an administrator could connect the power adapter to a power outlet. Then, they can follow the provided user manual instructions to connect it to the router Wi-Fi. The printer software could be installed during the software set-up installation on each employee in laptop, whereby Windows offers a 'Printers and Scanners' interface for a computer to search for nearby printers. Then, an administrator in your system could manually install ink and paper to the printer. In an unusual case, there is also an option to connect the printer via wired connection to the router, with a cord that arrives with the box to any device with a USB type A port. In this way, any device connected to the router could access the printer. Given our preference of a wireless system to maintain an uncluttered office, connecting the printer wirelessly is a sleek method.

Evaluation

We Suggest Using the Epson 4 in 1 Ecotank printer as it provides all the scan, fax and print features necessary for an office workplace in a single go. Also, it is extremely time consuming to manually add the papers into the Epson Premium printer each time for printing, reducing employee efficiency. This could decrease the productivity of the employees overtime. The Epson Ecobtnk printer is also an overall more economical option.

9.1.2 Ink

Ink cartridges are the replaceable containers that are inserted inside the printer to inject ink onto the printing paper. For a long-lasting printer, using good quality ink helps a lot. We suggest using the Epson Ecotank Inkbottles for the printer as it provides the best colours for printing.

Figure 14: Epson Ecotank Ink(epson.com)

- o Given that there are 5000 pages printed across both offices, and each cartridge is able to print approximately 6000 pages, then 20 cartridges are required to support printing for two years.

Pricing Summary: Epson Ecotank Ink Bottles

Initial Costs:
- **Installation Cost:**
  - o Delivery Fees: Free Delivery
  - o Personnel Fees: none
- **Product Costs:**
  - o Individual product: $27.86

Total cost for 2 years :$557.20

9.1.3 Paper

Our research of the best printer paper available recommend HP Printer Paper, Premium32, for SMART Company. The paper is heavy, thick, and smooth enough for both laser and inkjet printing.

Inkjet printers recreate text and image prints by spraying wet or liquid ink onto a paper. To create smudge-free prints, you ought to use thick and fast-absorbing paper. On the other hand, laser printers print by melting the toner onto the paper. Therefore, the ideal laser printing paper has to withstand the heat generated by the printer. The HP Printer Paper, Premium32, is our best printer paper pick. It is engineered for use in both inkjet and laser printers.

HP Premium24

The HP Premium24 paper is a perfect multipurpose paper. It is heavy and thick enough for use in inkjet printers without ink bleeding through, and is equally optimised to withstand the heat generated by laser printers. The 100 bright and 163 white paper creates popping black text and vivid colour image prints, giving your documents a premium professional look. It is an HP product, but it is perfectly compatible with all printer brands. The Hp Premium 24 paper has a jam free guarantee so there is no worry or time spent on fixing the printer and the entire company losing its momentum. The paper has a premium smooth finish and since it is thick this is ideal for double sided printing.
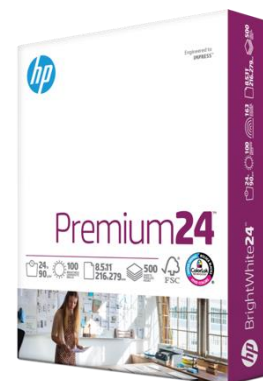
Figure 15: HP Premium24(hppaper.com)

Pricing Summary: HP Premium Paper

Initial Costs:
- **Installation Cost:**
    o Delivery Fees: Free Delivery
    o Personnel Fees: none
- **Product Costs:**
    o Individual product: $30 per 500 sheets
- **Total Recurring cost:** 30 per 500 sheets

Total cost for 2 years :$1338 (might vary on user usage)

Hammermill Premium Inkjet and Laser Papers

The Hammermill Premium Inkjet and Laser Papers are optimised for inkjet and laser printing. It is possible to print rapidly and double sided, without the apprehension of show-through. The paper is crisp and has a premium smooth feel. The premium finish, creates impressive, bold black texts and colourful image prints. The hammermill printer is precisely engineered for inkjet printers. It is thick and heavy, which ensures smudge free marketing materials. The paper is also bright white which really helps the texts printed stand out, with a matte

Figure 16:Hammermill Premium(hammermill.com)

finish for clear and sharp images. This provides the best output in terms of quality and efficiency. However, the paper is not ideal for photos that need a glossy finish.

The paper is sold in reams of 500 sheets each or a carton pack of several sheets to suit your needs. The Hammermill premium paper is acid-free, which prevents crumbling and yellowing over time.

Versatility of ordering 2500 sheets delivered to the Wollongong office, and 2500 sheets delivered to the Liverpool office

Our company suggests using the Hammermill Premium A4 papers because it is the best value for money product. With its great features like heavy and bright paper it provides the best output in terms of quality and efficiency. Also, at $2500 pages for 102 dollars, it is the most economical option for your option whilst retaining quality.

> **Pricing Summary:** Hammermill Premium Paper
>
> **Initial Costs:**
> - **Installation Cost:**
>   - Delivery Fees: Free Delivery
>   - Personnel Fees: none
> - **Product Costs:**
>   - Individual product: $50 per 2500 sheets
> - **Total Recurring cost:** 50 per 2500 sheets
>
> **Total cost for 2 years: $200 assuming 5000 sheets of paper is used in 1 year(might vary on user usage)**

10 Mobile Device Management

Contrastingly to Endpoint Security Software, Mobile Device Management (MDM) software will offer your employees safety while operating in the workplace. MDM software includes protection such as restricting applications that are not related to SMART Company, and creating a professional environment on work devices to be used solely in the office. This will greatly benefit your employees by allowing them to distinguish the work environment and out-of-work time, relevant in remote working situations.

Through our research, we recommend the use of on our concluded laptop set up, so that employees can improve productivity and safety in the office and at home. Additionally, we recommend the use of Employee Monitoring Software on our mobile phones so that employees can improve productivity and safety in the office and at home. This can primarily be achieved through the whitelisting of work-related apps. This is achieved with a Mobile Device Management (MDM). MDM is a centralised tool for managing multiple mobile devices. Our solution has recommended the Android Samsung Galaxy A13 for your employee's phones. Thus, the Android MDM will allow administrators to monitor, manage and secure work mobile phones.

As your business moves to benefit from hybrid and remote workforces, challenges arise in managing and protecting the different devices that access organisation resources. Microsoft Intune, which is included in the Microsoft 365 Business Premium plan that we recommended, is a cloud-based application that manages your organisation-owned devices namely the mobile phones and laptops in a centralised intuitive dashboard. In this way,

Features include:
- **App Management:** built-in app experience, including app deployment, updates, and removal. You can connect to and distribute apps from your private app stores, enable Microsoft 365 apps, deploy Win32 apps, create app protection policies, and manage access to apps and their data.
- **Integration with Microsoft Defender for Endpoint**, focusing on security for your endpoints (employee mobile phones and laptops) through response to threats, real-time risk analysis, and automated recovery.
- **Web-based admin centre** that can be accessed from any device connected to the Internet, including features such as data-driven reporting.
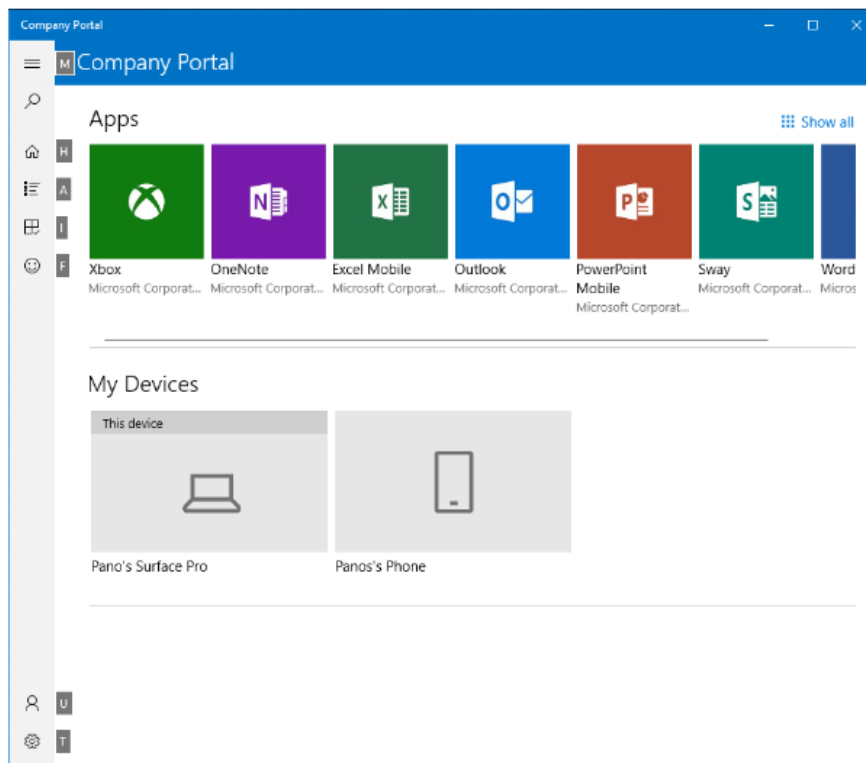
- **Integration with Microsoft 365** which is well-considered due to our choice of Microsoft 365 Business Plan. This will boost employee productivity as Intune will allow you to deploy apps such as OneDrive and Outlook to in your organisation.
- **Support for Mobile Device Management (MDM):** Intune enables your devices to be fully managed, including the users that sign in, the apps that are installed on the devices, and the data that is accessed. This is conducted by 'enrolling' organisation-owned devices.
- **Support for Mobile Application Management (MAM):** MAM is the focus on secure access to apps and protecting the data within the apps.
- **Integration with Windows Hello for Business:** Additional endpoint security by replacing endpoint passwords with a PIN code or biometrics such as fingerprint or facial recognition. This information in stored locally on the affected device, further increasing security.
- **Integration with VPN profiles:** Assign VPN settings to users and devices in your organization. Use these settings so users can easily and securely connect to your organizational network.

Note, as Intune is used on organisation assigned devices, MDM (Mobile Device Management) is utilised to manage all aspects of the device. This also allows the enforcement of specific security and encryption protocols, Contrastingly, MAM is typically used when employees bring their own device, allowing applications with corporate data to be managed as opposed to the entire device.

Installation
10. Sign into the Intune Admin portal known as Microsoft Endpoint Manager
11. Configure the custom organisation domain. In this case, through the purchase of the domain 'thesmartcompany.com.au' from GoDaddy (detailed in the Website section), the integration of GoDaddy with Microsoft 365 means that once you log into the GoDaddy portal configuration will immediately occur.
12. Add accounts for your 12 employees. These accounts can be used on an employees mobile phone and laptop. Details such as first name, last name, display name, username and password (used to access their portal) is given.
    o Assign user roles as well. Visiting the separate Manage Roles panel will allow the installer to set specific permitted activities.
13. Assign Intune licences. With Microsoft 365 Business Premium, licences for 300 users are included by default.

14. Give Mobile Device Management (MDM) authority on the devices for Intune to manage them. This may require up to eight hours for the device to sync.

15. Add permitted applications for each group of devices. This is permitted for Microsoft store apps, Microsoft 365 apps, Android store apps and other executable apps.

16. Specify device-wide features such as:
    - Activating Microsoft Defender for Endpoint (previous section)
        - Also configure BitLocker (mentioned in the Additional Security Practices section. This will encrypt the physical data stores on Windows) and Windows Defender
    - Device restrictions, for instance employee's cannot use an Android or Windows 11 device camera
    - Enforce the use of VPN through VPN profiles so users can quickly connect to the network
    - Enforce the use of Wi-Fi through WiFi profiles so that your employees can access the corporate router easy when they are in the office
    - Windows 11 settings (for instance a password must be required)
    - Load exchange email settings to reduce employee set-up

17. Enrol the corporate-owned devices by installing the Intune Company Portal application from the Android Playstore and the Windows Store. Once the device has installed the application, enrolment can be prompted by signing in to the Company Portal with the accounts created in Step 3. Microsoft Intune automatically marks certain devices as corporate-owned. This classification will allow SMART Company to manage your devices with more control and access.

18. Application protection policy: Focuses on our offer of security in your solution. Applications can be configured to require a PIN to access and will encrypt any stored information. This can also prevent company data transferring from one application being used in another, applying restrictions such as save-as and use of the clipboard.

Therefore, through using an MDM solution on your corporate Android mobile phones and the laptops, Intune can support the security of your devices for employees allowing them to work in a professional and efficient environment. This includes their own privacy and security, with password rules, as well as a list of applications that are relevant to the work that they conduct for SMART Company. Hence, the reliability, quality, and professionalism of your company will be greatly increased.

11 Security Practices

The following section details additional security procedures that SMART Company can implement using our solution, to enhance their security.

- As mentioned, our recommendation of Microsoft Teams and SharePoint will greatly protect the files and messages between your employees. Microsoft offers a login function, which will offer the opportunity for a secure password. This should be bolstered through the use of 2-Factor Authorisation (2FA) also referred to as two-step verification. 2FA is a process which uses supply two steps to authenticate a user. Most frequently, this is achieved through receiving a code through on a phone application such as Google Authenticator or LastPass. This extra layer of security is extremely effective, a 2019 report from Microsoft conclusion that 2FA blocks 99.9% of automated attacks (Bott, 2022). 2FA through a form of authentication could easily be achieved through installing the application on employee's work phones, or sending a message which contains the identifying code to the employees number.

- Specifically, Microsoft Teams offers a teams-management panel that includes an option for '2-Factor-Authentication enforcement. This will ensure that all of your employees protect their accounts with two steps. Additionally, Microsoft Teams offers an administration option to enforce a 'password policy' This improves password security by specifying a length and other password rules such as a mix of uppercase and lowercase letters.

- Windows offers settings to improve security on each employee's workstation laptops. Important settings to change are the automatic 'lock down' of a computer after a certain level of inactivity, and the requirement of a password once a computer wakes back up. This is important in the case an employee working from home leaves their computer unintentionally unsupervised. In this way, security will be improved by automatically locking their profile, and requiring a password to log back into the computer.

- Windows also offers a built-in disk encryption tool known as BitLocker. This means that all files stored on the disk of the computer is encoded and stored with a key for decryption. This particularly improves the security of offline OneDrive files which are stored locally on the user's computer.

- Additionally, the use of Phishing Awareness Training programs which send fake phishing emails to train employees to be wary of clicking links in emails and Microsoft Teams messages will enhance internal security. These courses are offered by organisations such as Phriendly Phishing and Phish Threat. Services include automatically enrolling an employee in training if they click on a simulated attack.

- Interestingly to note, our solution improves its security by not recommending the mandate of a monthly password-reset for all employees. This is because it is common for employees to add numbers to the end of the original strong password, or eventually have only weaker passwords because they cannot recall a strong password that they may have memorised the month prior.

12 Pricing of Recommended Solutions

Modem	$2847.00
Aussie Broadband	$10032.00
Microsoft 365 business premium	$10947.60
Dell Inspiron Laptop	$20895.60
Philips Monitor	$3228.00
Samsung Galaxy Phone	$5871.90
Aussie Broadband Stay Connected	$5760
Galaxy Phone Cover	$168
Microsoft Modern USB-C Headset	$878.50
Brateck Motorised Projector Screen	$827.95
Selby 90 Projector Screen	$699
BenQ Projector	$2072
Logitech Group	$3598
Laser Presentation Remote	$177.38
Configuring VPN	$750
End Point Security Defender for business	$250
Epson Ecotank Printer	$2879.89
Epson Ecotank Ink bottles	$557.20
Paper	$200
Docking Station	$2988.00
Laptop Cover	$131.88
Wireless Keyboard and Mouse	$720
Total Price	**$76479.90**

In summary, the offices will appear as follows when it is completed:

Wollongong Office:
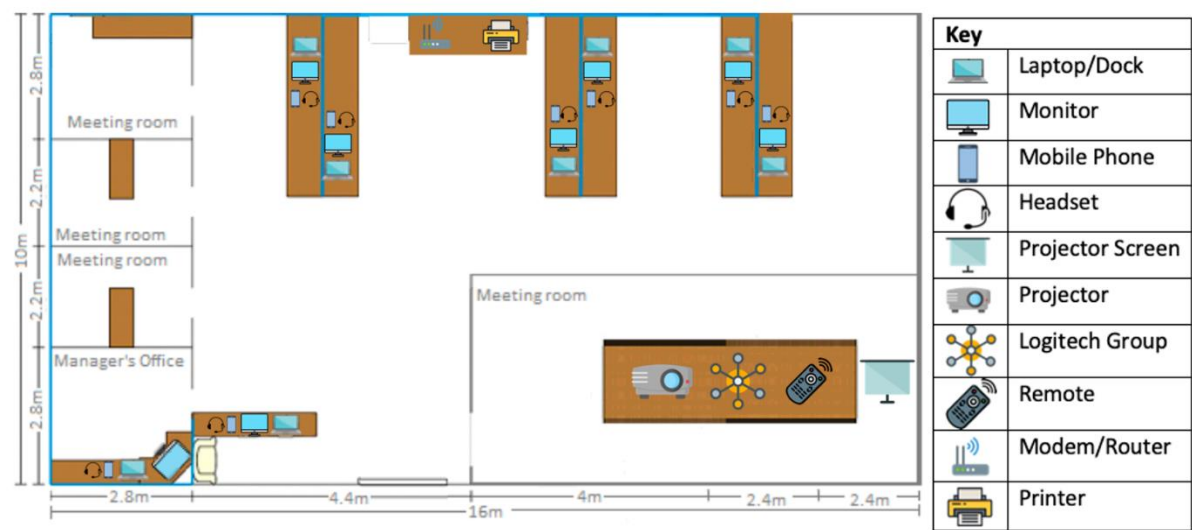
Liverpool Office:
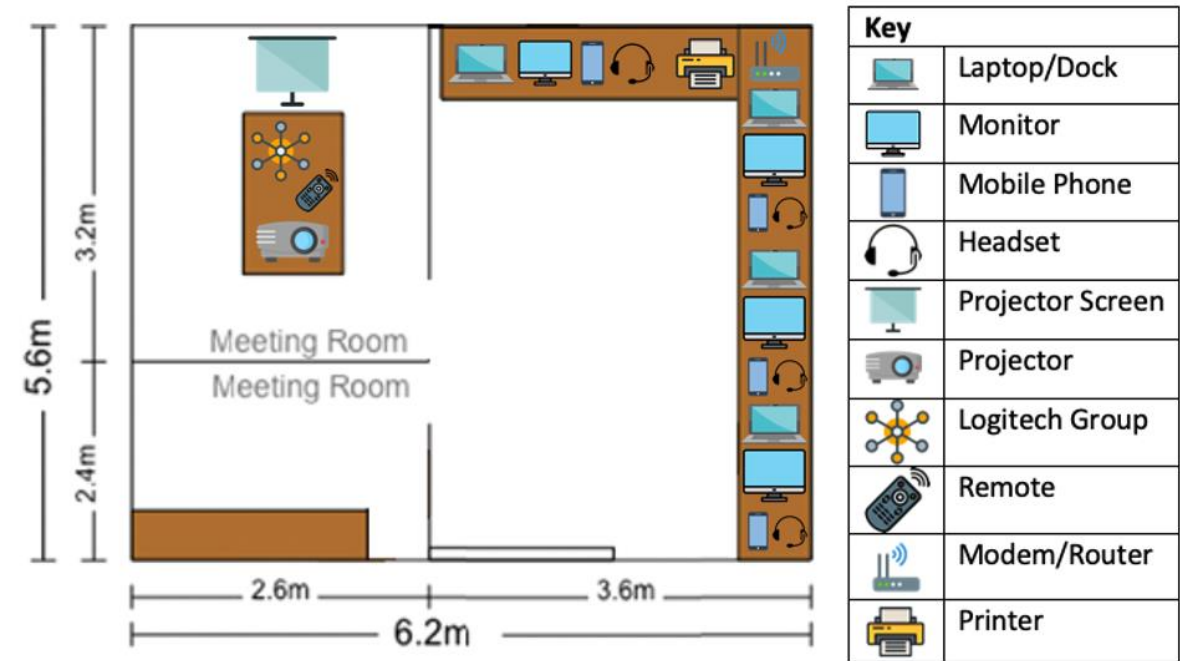
13. Conclusion

As a result of the findings presented, it is critical that Smart Company takes advantage of the new digital opportunities by implementing an information system to improve synergy between departments and business procedures, thereby increasing efficiency, accuracy, employee morale, and customer service. Project 'Ascension' is essential for Smart Company to maintain a presence in the modern market. Our solution will provide a high level of interconnectivity with each of the offices, unifying the Liverpool and Wollongong branches. Thus, Smart Company will be able to achieve greater levels of productivity, efficiency, security, and satisfaction for employees and clients. In doing so, the integration of our solution is imperative for Smart Company's prosperity.

The major advantages of our solution:
- Through the integration of cloud capabilities in Microsoft 365 with a focus on Microsoft Teams, employees have access to:
  - **Communication:** through conference meetings between offices and clients outside of the office, leading to maximum productivity
  - **Security:** as the software incorporates encryption before transmission of data, thus improving confidentiality
  - **Storage:** keeping files and data in one secure place that authorised employees can access whenever necessary
- The portable nature of our new and improved workstations through laptops and mobile phones contributes to a more productive work environment.
- A network of conference devices in each main meeting room contributing to a seamless conferencing experience when presenting or discussing company projects
- Printing and website domain hosting allows not only our company but also our clients to advertise their work and current projects for maximised results
- Internal and external security measures prevent threats and malware from outside sources as well as employees from negatively affecting the company
- A simple yet effective wireless solution allows for a fast-working Internet source that both offices benefit from. The use of docks and monitors benefits worker productivity and streamlines the working process.

Based on the presented network solution, if 'Project Ascension' is accepted, the team will move on to the rollout of the solution system. This will be accomplished within the set timeframe by Smart Company, and we look forward to hearing from you in the future.

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11. Appendix

Appendix A

DrayTek configuring a Dial-In/Remote Access VPN

Router Set Up

SmartVPN Client

Glossary of key terms regarding laptops, monitors and docks. See subsections within Appendix C for more information

Appendix C.1

Glossary for Laptop Devices

Processor / CPU	"A processor is an integrated electronic circuit that performs the calculations that run a computer." ("What is a Processor? - Definition from Techopedia" 2020)
	Cores - "Cores are something that helps a CPU execute a process. If a CPU has multiple cores, the computer treats each core as a separate CPU that helps it process multiple tasks at the same time." (Club, n.d.)
	Threads - "A thread is a virtual version of a CPU core. To create a thread, Intel CPUs uses hyper-threading, and AMD CPUs uses simultaneous multithreading, or SMT for short (they're the same thing). These are both names for the process of breaking up physical cores into virtual cores (threads) to increase performance." (Harding 2018)
	GHz - "Processors work according to a clock that beats a set number of times per second, usually measured in gigahertz. For instance, a 3.1-GHz processor has a clock that beats 3.1 billion times per second. Each clock beat represents an opportunity for the processor to manipulate a number of bits equivalent to its capacity -- 64-bit processors can work on 64 bits at a time, while 32-bit processors work on 32 bits at a time" (Lander, n.d.)
OS - Operating System	"An operating system or OS is software installed on a computer's hard drive that enables the computer hardware to communicate and operate with the computer software." ("What is OS (Operating System)?" 2021)
Video Card / GPU	"Alternatively known as a display adapter, graphics card, video adapter, video board, or video controller, a video card is an expansion card that connects to a computer motherboard. It is used to create a picture on a display; without a video card, you would not be able to see this page.
	More plainly, it's a piece of hardware inside your computer that processes images and video, some of the tasks normally handled by the CPU.

	Video cards are used by gamers in place of integrated graphics due to their extra processing power and video ram."
RAM - Random Access Memory	"RAM (random access memory) is a computer's short-term memory, where the data that the processor is currently using is stored. Your computer can access RAM memory much faster than data on a hard disk, SSD, or other long-term storage device, which is why RAM capacity is critical for system performance." (Villinger 2022)
Hard Drive	"A computer hard drive (or a hard disk or HDD) is one kind of technology that stores the operating system, applications, and data files such a documents, pictures and music that your computer uses. The rest of the components in your computer work together to show you the applications and files stored on your hard drive." ("What is a Hard Drive? | Crucial", n.d.)
Display	"A display device is a term used to describe the device used to view video, images, or text." (Hope 2021)
Ports (computer)	"A port is a virtual point where network connections start and end. Ports are software-based and managed by a computer's operating system. Each port is associated with a specific process or service. Ports allow computers to easily differentiate between different kinds of traffic: emails go to a different port than webpages, for instance, even though both reach a computer over the same Internet connection." ("What is a computer port? | Ports in networking", n.d.)
USB A ~ refer to appendix 1	"A USB port is a standard cable connection interface for personal computers and consumer electronics devices. USB stands for Universal Serial Bus, an industry standard for short-distance digital data communications." ("What is a USB Port and How Can You Use It?" 2021) USB A is an old industry standard for data communications. Blue tipped connectors symbolise a USB A 3.0 which offer faster transfer rates.
USB C ~ refer to appendix 1	"A USB port is a standard cable connection interface for personal computers and consumer electronics devices. USB stands for Universal Serial Bus, an industry standard for short-distance digital data communications." ("What is a USB Port and How Can You Use It?" 2021) "USB C is the new unofficial industry standard for USB type connectors. This is because of the faster data rates, ability to use as HDMI connectors (with adapters), higher power capacity (upto 100W) and ease of use." (Whitener 2021)

HDMI	"HDMI (high definition multimedia interface) is the acknowledged connection standard for transferring video and audio digitally from a source to a video display device or other compatible home entertainment devices." (Silva 2021)
DisplayPort	"At its core, DisplayPort is a digital interface designed to deliver video and audio over a singular cable. Much like HDMI, it can connect a monitor to a data source, like a graphics card, and deliver the video and sound that it's outputting to the display screen." (Matters, n.d.)
DIsplayPort over USB C	As the name suggests, when a USB C connector detects a monitor is connected to it, it switches over to display mode over USB C.
Peripheral Devices	"A peripheral device is any auxiliary device that connects to and works with the computer to either put information into it or get information out of it." (Fisher 2022)

Appendix C.2

Glossary for monitors

Ergonomic	Ergonomics is the process of designing or arranging workplaces, products and systems so that they fit the people who use them. https://www.ergonomics.com.au/what-is-ergonomics/
Aspect Ratio	The aspect ratio is the ratio between the width and height of the screen. https://www.displayninja.com/what-is-aspect-ratio/
Plug and Play	Plug and play is "a feature of a computer system by which peripherals are automatically detected and configured by the operating system" https://www.merriam-webster.com/dictionary/plug%20and%20play
Viewing angle	Viewing angle refers to a range of angles where the image displayed on a monitor remains suitable to the user. https://www.tomshardware.com/reference/monitor-viewing-angle-definition

Appendix C.3

Glossary for Dock

Plug and play	"Plug and play is "a feature of a computer system by which peripherals are automatically detected and configured by the operating system" https://www.merriam-webster.com/dictionary/plug%20and%20play
Dock	"In computing, a docking station or port replicator (hub) or dock provides a simplified way of "plugging-in" a laptop computer to common peripherals." (Heimduo 2020)
100W	Measurement of how much power it can supply
USB C	"A USB port is a standard cable connection interface for personal computers and consumer electronics devices. USB stands for Universal Serial Bus, an industry standard for short-distance digital data communications." ("What is a USB Port and How Can You Use It?" 2021) USB C is the new unofficial industry standard for USB type connectors. This is because of the faster data rates, ability to use as HDMI connectors (with adapters), higher power capacity (upto 100W) and ease of use. (Whitener 2021)

Appendix D

Information regarding the Pros and Cons of laptops, monitors and dock selection. See subsections within Appendix D for more information

Appendix D.1

Table of Hyperlinks for Options

Option 1 ~ Inspiron 15 Laptop	https://www.dell.com/en-au/work/shop/business-laptops-ultrabooks-and-tablets/inspiron-15-laptop/spd/inspiron-15-3525-laptop/smhni352502au
Option 2 ~ Inspiron 15 Laptop	https://www.dell.com/en-au/work/shop/business-laptops-ultrabooks-and-tablets/inspiron-15-laptop/spd/inspiron-15-3525-laptop/smhni352500au
Option 3 ~ New Inspiron 15 laptop	https://www.dell.com/en-au/work/shop/business-laptops-ultrabooks-and-tablets/new-inspiron-15-laptop/spd/inspiron-15-3520-laptop/smhni352003au

Option 4 ~ New Inspiron 15

https://www.dell.com/en-au/work/shop/business-laptops-ultrabooks-and-tablets/new-inspiron-15-laptop/spd/inspiron-15-3520-laptop/hni352002au

Option 1

Inspiron 15 Laptop (1199$) ~ Third most recommended option
Description

    Spec:

    Processor - Ryzen 5 5625U 6-core/12-thread Processor with radeon graphics

    OS - Windows 11 Home (S mode) English

    Video card - AMD radeon graphics

    RAM - 8GB DDR4 3200MHz

    Hard Drive - 512GB M.2, NVMe, SSD

    Display - 15.6" (1920*1080, 120Hz, no touch screen)

    Ports - 1 HDMI; 1 USB C; 3 USB 3.2 GEN; 1 USB 2.0 GEN; 1 headphone / mix combo

    Dimensions - Height (20mm), Width (360mm), depth (235mm)

    Weight (minimum) 1.68kg

Pros

Lots of storage

Adequate speed for office tasks to be performed

Same windows interface as previous hardware

HD screen with good resolution

Cons

Heavy (1.7kg minimum)

Battery life declines with continuous use & might need a charger handy when using it out of the office

USB C connection does not function as a DisplayPort Alternative

Option 2

Inspiron 15 Laptop (800$) ~ Fourth most recommended option
Description

    Spec:

    Processor - AMD Athlon Silver 3050U Mobile Processor with radeon graphics

    OS - Windows 11 Home (S mode) English

    Video card - AMD APU Graphics

    RAM - 8GB DDR4 2400MHz

Hard Drive - 256GB M.2, NVMe, SSD

Display - 15.6" (1366*768, 60Hz, no touch screen)

Ports - 1 HDMI; 1 USB C; 3 USB 3.2 GEN; 1 USB 2.0 GEN; 1 headphone / mix combo

Dimensions - Height (20mm), Width (360mm), depth (235mm)

Weight (minimum) 1.68kg

Pros

Cheapest option

Does the job required to an adequate degree

Cons

Not super futureproof (might need new hardware in 3 yrs)

Heavy (1.7kg minimum)

Battery life declines with continuous use & might need a charger handy when using it out of the office

Screen is not the best

Option 3

New Inspiron 15 laptop (1499$) ~ Recommended option

Description

Processor - 12th Gen Intel® Core™ i7-1255U (12 MB cache, 10 cores, 12 threads, up to 4.70 GHz Turbo)

OS - *Windows 11 Home, English*

Video card - Intel® Iris® Xe Graphics

RAM - 16 GB, 2 x 8 GB, DDR4, 3200 MHz

Hard Drive - 512 GB, M.2, PCIe NVMe, SSD

Display - 15.6" (1920x1080, 120Hz, no touch screen)

Ports - 1 USB 3.2 Gen 1 Type-C® port with DisplayPort 1.4 (on 12th Gen Processor configured with Type-C®)*

1 USB 3.2 Gen 1 port (on systems configured with Type-C®)

2 USB 3.2 Gen 1 ports (on systems configured with non Type-C®)

1 USB 2.0 port

1 Power Jack

1 headset (headphone and microphone combo) port

1 HDMI 1.4 port

HDMI 1.4 (Maximum resolution supported over HDMI is 1920x1080 @60Hz. No 4K/2K output)

Dimensions - Height (21mm), Width (358.5mm), depth (235.5mm)

Weight (minimum) 1.65kg

Pros

Lots of storage

High speed avaliable to complete tasks

Processor can handle lots of load

Same windows interface as previous hardware

FHD screen with good resolution

Double RAM amount compared to exisiting hardware

Displayport in USB-C

Power avaliable through USB-C

High quality camera inbuilt

Cons

Heavy (1.7kg minimum)

Battery life declines with continuous use & might need a charger handy when using it out of the office

Option 4

New Inspiron 15 laptop (1299$) ~ Second most recommended option

Description

Processor - 12th Generation Intel® Core™ i5-1235U (12MB Cache, up to 4.4 GHz, 10 cores)

> *OS - Windows 11 Home, English*
>
> *Video card* - Intel® UHD Graphics
>
> *RAM* - 8 GB, 1 x 8 GB, DDR4, 3200 MHz
>
> *Hard Drive* - 512 GB, M.2, PCIe NVMe, SSD
>
> *Display* - 15.6" (1920x1080, 120Hz, no touch screen)

Ports - 1 USB 3.2 Gen 1 Type-C® port with DisplayPort 1.4 (on 12th Gen Processor configured with Type-C®)*

1 USB 3.2 Gen 1 port (on systems configured with Type-C®)

2 USB 3.2 Gen 1 ports (on systems configured with non Type-C®)

1 USB 2.0 port

1 Power Jack

1 headset (headphone and microphone combo) port

1 HDMI 1.4 port

HDMI 1.4 (Maximum resolution supported over HDMI is 1920x1080 @60Hz. No 4K/2K output)

> *Dimensions* - Height (21mm), Width (358.5mm), depth (235.5mm)
>
> *Weight* (minimum) 1.65kg

Pros

Lots of storage

Adequate speed for office tasks to be performed

Same windows interface as previous hardware

FHD screen with good resolution

Displayport in USB-C

Power available through USB-C

High quality camera inbuilt
Cons
Heavy (1.7kg minimum)
Battery life declines with continuous use & might need a charger handy when using it out of the office

Appendix D.2

Table of Hyperlinks for Options

Option 1 ~ Dahua LM24-C200 23.8" 75Hz FHD VA Monitor	https://www.mwave.com.au/product/dahua-lm24c200-238-75hz-fhd-va-monitor-ac56598
Option 2 ~ Philips 242B1 23.8" 75Hz Full HD Adaptive Sync IPS Monitor with PowerSensor	https://www.mwave.com.au/product/philips-242b1-238-75hz-full-hd-adaptive-sync-ips-monitor-with-powersensor-ac44326

Option 1
Dahua LM24-C200 23.8" 75Hz FHD VA Monitor (179$) ~ cheap option

Description
    Spec need
    Screen tilt: -5°±2°/15°±2°
    Backlit: E-LED
    Brightness/luminescence: 250 (typ)
    Viewing angle: 178°
    Response time: 5ms
    Signals: VGA*1, HDMI 1.4*1, Audio out*1
Product with stand at max height 542.4 * 334.5 * 111.5 mm

Energy consumption
20W (standard)
31W (max)
<0.5W(standby)

Pros
Lower cost
16:9 display with 1920 * 1080
Comes with HDMI cable
Tilt options available (-5°±2°/15°±2°)

Cons
No height adjustability
No swivel (angle)
No pivot (angle/direction)
Potentially has flicker
Highest resolution is (HD)

Option 2
Philips 242B1 23.8" 75Hz Full HD Adaptive Sync IPS Monitor with PowerSensor (270$) ~
recommended option

Description
Spec need
      Backlit: W-LED
      Brightness/luminescence: 250 (typ)
      Viewing angle: 178°

Response time: 4ms

Signals: VGA*1, HDMI 1.4*1, Audio in + Headphone out (*1), DisplayPort 1.2 DVI-D (digital HDCP), USB-B (upstream), USB 3.2 * 4 (downstream with 1 fast charge B.C. 1.2)

Built in speakers

Height adjustment: 150mm

Pivot: -/+ 90°

Swivel: -/+ 180°

Tilt: -5 ~ 35°

Product with stand at max height 540 * 501 * 205 mm

Energy consumption

10.4W (eco)

14.5W (typical)

0.35W(standby)

Pros

Ergonomic adjustments can be made

Anti-glare

16:9 display with 1920 * 1080

Cheap running (14.5W usual; 10.4W Eco)

Comes with HDMI cable

PowerSensor (senses if someone is in front of screen & throttles brightness if no one is there)

LightSensor (modulates brightness)

Flicker-free

Built in speakers

Cons

Higher cost

Highest resolution is (HD)

Option 1 ~ 209$

Description

Spec need

Interfaces:

2 * USB 2.0 4 pin USB Type A

3 * SuperSpeed USB 3.0 9 pin USB type A

2 * display / video - HDMI

1 * display / video - DisplayPort

1 * network - RJ-45

1 * headphones - output 3.5mm

1 * SuperSpeed USB 3.0 Type B

Includes

1 * HDMI-DVI adapter

1 * SuperSpeed USB cable (2ft)

AC Power adapter

Installation Driver CD

Docking station

Pros

Can supply power to laptop

Easy cable management

When you want to take your laptop home, you just unplug the doc from the laptop

Easy to use

More future proof as can add additional monitors if need be

Helps with cable management

Cons

Price

Lower performance in display with USB A doc

CPU usage increases with more displays and accessories connected to doc

Option 2 ~ 119$

Description

    Spec needed

    Interfaces:

2 * USB 3.1 USB Type A

1 * VGA 1080p

1 * display / video - HDMI

1 * network - RJ-45

1 * USB 3.1 Type C with power delivery 100W

Pros

Cheaper

Can supply power to laptop (with additional power supply)

Does the job

Helps with cable management

Cons

Display cable will need to connect directly to the laptop

Power cable will need to connect directly to the laptop

Limited to one desktop

Option 3 ~ 258$

Description

    Spec ~ Dock

    Interfaces:

2 * USB 3.0 USB Type A

1 * USB 3.0 USB Type A fast charge

1 * USB 3.1 USB Type C Gen 1

2 * USB 3.0 USB Type C Power Delivery 3.0 (100W)

1 * VGA 1080p

1 * DisplayPort

2 * display / video - HDMI 4K

1 * network - RJ-45

1 * SD & microSD memory card reader/writer

1 * 3.5mm combo audio jack

      Spec ~ Power source

USB C cable 2m

100W wall charger

Pros

Multiple display connections available

Neat cable management

Serves as a platform to put the laptop onto

Easy to use

Lots of expandability options available

Charges laptop while in use

Appendix E

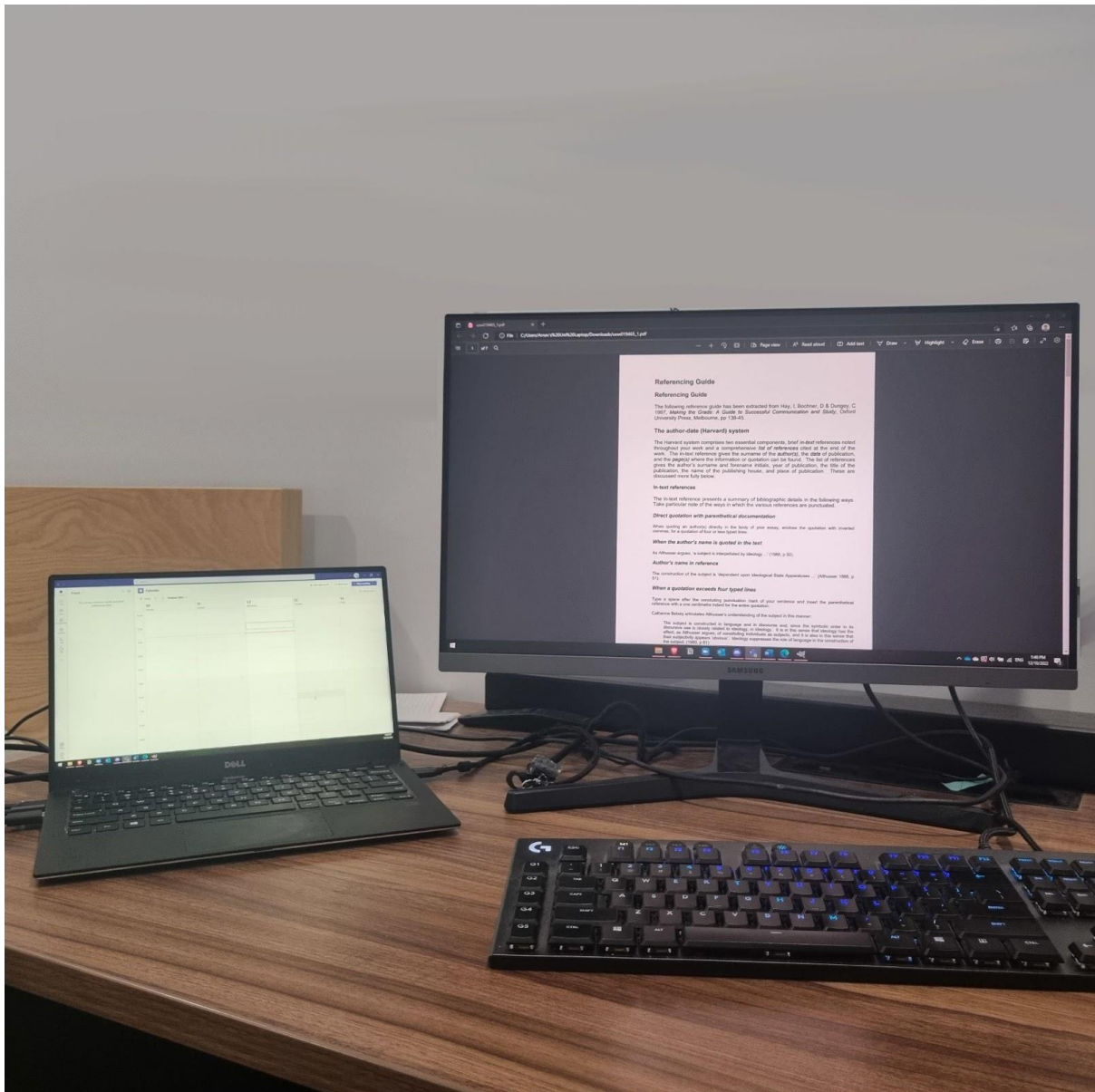**Photographs show casing the laptops, monitor, docking devices, keyboard + mouse and laptop case**

Appendix E.1

Photographs of laptop (note all laptop have same outside case; internal components differ)

Appendix E.2

Monitor Screen Section

E.2.1

(An example of monitor and screen combination. note is not the phillips 23.8" monitor")

E.2.2

Dahua LM24-C200 23.8" Monitor.

E.2.3

Philips 242B1 23.8" 75Hz Full HD Adaptive Sync IPS Monitor with PowerSensor