

ICT STRATEGIC PLAN

2022 - 2025



@ShireofQuairading



@QuairadingCaravanPark



@shireofquairading



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SECTION ONE: EXECUTIVE SUMMARY

The Shire of Quairading recognizes the evolving landscapes of both its internal and external environments. Embracing technology is crucial for enhancing its services, necessitating a unified approach to the adoption, application, and maintenance of technological tools, in harmony with the Shire's resources and objectives.

The ICT Strategic Plan outlines the Shire's vision for addressing immediate and future technological needs. It underscores the importance of leveraging advanced technology to prioritize both in-house and external customer services. This plan serves as a blueprint for adeptly managing IT, with its core aim to bolster the Shire's mission and amplify the efficiency of services to its community and stakeholders.

Future technological endeavours will span several departments, all converging towards a singular mission: to serve its community, the general public, and other interested parties. In this context, technology emerges as a pivotal tool for communication, integration, data exchange, and resource allocation. Additionally, it paves the way for cost savings by enhancing service efficiency through a unified technological architecture and standards.

This strategic document encourages inter-departmental synergies and promotes collaboration, rather than restricting individual departmental initiatives. It draws upon a balanced IT management approach, combining the strengths of both centralized IT governance and external IT support. A key component of the plan is the formulation of IT architecture and standards, essential for achieving scalability and seamless integration.

The IT Plan of the Shire of Quairading emphasizes a customer-centric approach to technology management. Internally, it champions teamwork, collective decision-making, and equipping staff with the right tools. Externally, it is committed to delivering anticipated services to its community, the public, and other stakeholders.

This Strategic Plan is dynamic, adaptable to the ever-changing technological landscape and the Shire's evolving needs. Serving as a guiding beacon, it ensures that the Shire's technological pursuits align with its overarching objectives, facilitating enhanced service delivery. All technological choices should be strategically driven, as outlined in this plan, guaranteeing decisions are flexible yet aligned with the Shire's aspirations.

SECTION TWO: FUTURE GOALS & STRATEGY

This ICT Strategic Plan will cover the period between July 2022 and June 2025. Some key goals include the following;

Project	Goal	ICT Trend
Altus	Implement new modules to provide mechanisms to automate repetitive tasks whilst integrating with existing SynergySoft GL.	Intelligent Apps and Analytics
Collaboration Tool	Adopt a collaboration tool that includes chat, video and sharing of content between internal staff. Functionality can include the ability to invite external contacts.	Multichannel Citizen Engagement
Computer Replacement Program	Define a structured program to replace office computers with standardised equipment based on a lifecycle. Adopt a standard operating environment (SOE) to help reduce IT support costs.	Digital Workplace
Cyber Awareness Training	Subscribe to an awareness training program for all employees. Such a platform should continually test employees based on a frequency and not be a once-off test.	Continuous Adaptive Risk and Trust
Data Backups	Instigate a new regime to meet backup retention needs and archival requirements. At any point in time three copies of the corporate data should exist being the live copy onsite, a backup copy onsite and a backup copy offsite.	Cloud to the Edge
Firewall Upgrade	Introduce deep packet inspection (DPI) firewalling so that incoming and outgoing traffic can be scanned for malicious content. Firewall capability should support two or more Internet links.	Continuous Adaptive Risk and Trust
Internet Communications	Implement a business grade, non-contended Internet link as a primary service. Implement a residential grade Internet link as a secondary service. Both links are to support utilising future cloud based applications.	Cloud to the Edge
Intranet Design	Implement an Intranet for the ability to share and manage content. An application can empower teamwork and help to quickly find information that seamlessly collaborates across the organisation.	Intelligent Apps and Analytics
IP Telephony	Upgrade the copper voice phone system. A virtualised phone system can deliver softphone capabilities for iOS, Android and Windows. A secure feature called SIP (calls over the Internet) can be used to reduce calls costs.	Digital Workplace
IT Policy Review	Ensure a document that defines roles and responsibilities, password requirements, granting/revoking access, account reviews and asset management/disposal.	Continuous Adaptive Risk and Trust
Multi Factor Authentication	Tighten security relating to Office 365 and WFH. Two Factor Authentication (2FA) to be implemented into the existing IT landscape for any IT related activities completed outside the office.	Digital Workplace

Project	Goal	ICT Trend
Office 365	Install Office 365 for a move to monthly billing. Desktop apps to be installed first followed by Exchange Online (email in the cloud). Investigate OneDrive for Business to deliver simultaneous editing.	Cloud to the Edge
Patching	Implement a new program that uses a test group for Windows computers prior to all computers receiving an update. Manage the installation of third party apps such as Adobe, Java etc. to address security concerns.	Continuous Adaptive Risk and Trust
Server Hardware Upgrade	Consideration on the overall server strategy including but not limited to extending the server warranty or moving to a hybrid, public or private cloud solution.	Cloud to the Edge
Shared IT Services	Design a hosted infrastructure platform that the Medical Clinic can utilise that would have similar characteristics to a private cloud.	Cloud to the Edge
Work From Home	Build the Work From Home (WFH) strategy into the business. Easy to use technologies will aid in securely working from outside the office. A WFH policy is required.	Digital Workplace
Software Subscriptions	Commit to an OpEx model of purchasing internal tools such as Adobe for Professional and Creative Cloud.	Intelligent Apps and Analytics

SECTION FOUR: ICT TRENDS FOR ORGANISATIONS

Trends and technologies in the IT industry change at an alarming rate. The Shire of Quairading is strongly reliant on day-to-day IT resources for nearly all facets of operation. As such, it is prudent to review and adopt the current industry trends for organisations (Gartner Inc.).

ICT Trend	Explanation
Intelligent Apps and Analytics	<p>Over the next few years, virtually every app, application and service will incorporate some level of AI. Some of these apps will be obvious intelligent apps that could not exist without AI and machine learning.</p> <p>AI has become the next major battleground in a wide range of software and service markets, including aspects of enterprise resource planning (ERP). Packaged software and service providers should outline how they'll be using AI to add business value in new versions in the form of advanced analytics, intelligent processes and advanced user experiences.</p>
Cloud to Edge	<p>Edge computing describes a computing topology in which information processing, and content collection and delivery, are placed closer to the sources of this information. Connectivity and latency challenges, bandwidth constraints and greater functionality embedded at the edge favours distributed models.</p> <p>While many view cloud and edge as competing approaches, cloud is a style of computing where elastically scalable technology capabilities are delivered as a service and does not inherently mandate a centralised model.</p>
Continuous Adaptive Risk and Trust	<p>To securely enable digital business initiatives in a world of advanced, targeted attacks, security and risk management leaders must adopt a continuous adaptive risk and trust assessment (CARTA) approach to allow real-time, risk and trust-based decision making with adaptive responses.</p> <p>Security infrastructure must be adaptive everywhere, to embrace the opportunity — and manage the risks — that comes delivering security that moves at the speed of digital business.</p>
Digital Workplace	<p>The government workforce of the future will be populated with digitally literate employees, from frontline workers to top-level executives. The digital workplace is open, flat and democratic. It is the organisational manifestation of open government. CIOs and IT leaders must take a leadership role in building a more social, mobile, accessible and information-driven work environment.</p> <p>Adopting this trend would allow the Shire of Quairading employees to have the flexibility to perform their roles, with the ability to access information at a time and place of their choosing. Increased productivity would be achieved over time as employees gain a greater awareness of technology services available to them through effective service delivery and communication.</p>
Multichannel Citizen Engagement	<p>Government jurisdictions with multiple channels (municipal offices, physical mail correspondence, contact centres, e-government websites and mobile apps) are struggling to provide their citizens with one coherent view of the enterprise.</p> <p>A multichannel strategy, in the context of digital government, means more than delivering a seamless experience to stakeholders. It also is about delivering</p>

ICT Trend	Explanation
	interactions that are connected, consistent, convenient, collaborative, customized, clear and transparent. To produce those outcomes, policymakers and CIOs must radically redesign service models by combining traditional marketing tools (such as focus groups, user experience labs, surveys and stakeholder analysis) with new approaches (such as citizen co-creation initiatives, agile development and design thinking).

Trend Adoption Overview

Vision					
Our Shire is a place of welcome for all, where we work together, with thriving industry creating jobs, a bright future for our young people and a bustling town in a beautiful and productive rural setting.					
Trend	Intelligent Apps and Analytics	Cloud to the Edge	Continuous Adaptive Risk and Trust	Digital Workplace	Multichannel Citizen Engagement
Objective Summary	Implement AI to add business value into products offered to the customer base.	Instigate storage and computer requirements that utilise a hybrid cloud model as a service.	Adopt a people process technology methodology to minimise the threat of cyber security related incidents.	Employees will have the flexibility to perform their roles with the ability to access information at a time and place of their choosing.	The Shire will deliver services using multiple channels that are connected, consistent, convenient, customised, collaborative, clear and transparent.
Delivery Strategies	<ul style="list-style-type: none">Explore an intelligent app that references data and analytics to improve customer service.Measure website and social networking activities.Use Power BI to monitor and track customer service requests.	<ul style="list-style-type: none">Investigate a hybrid cloud model that uses software defined storage.Explore Microsoft Office 365 for Desktop Apps/Exchange Online and a SharePoint Intranet.	<ul style="list-style-type: none">Implement DPI-SSL on all hardware firewalls.Stay up to date with Microsoft Operating Systems to reduce vulnerabilities.Adopt an employee cyber awareness training platform.	<ul style="list-style-type: none">Implement SSL VPN for secure remote access.Provide Windows-based laptops/tablets to specific staff.Implement Two Factor Authentication for identity and access management.	<ul style="list-style-type: none">Ensure all web services are available, user friendly and consistent on all devices (i.e. laptop, tablet and phone).Ensure continued integration across Altus Suite.

1 Backups & Disaster Recovery

1.1 Industry Best Practice

Gartner, IDC, Forrester & Yankee Group report that on average, IT system downtime costs between \$84,000 and \$108,000 for every hour. Additionally, it is reported that 90% of businesses that lose all their data go out of business within the following 12 months. Protection of corporate data is achieved through a complete backup and replication solution consisting of both on premise and cloud components.

The on premise component is a device that resides within the same premises as the hardware storing the majority of corporate data. This device is responsible for regular incremental backups of nominated data at intervals in accordance with the organisation's recovery point objective (RPO). Ideally, if suitable, incremental backups for an organization with normal 8am-6pm operating hours should occur every hour. This will result in 24 intra-daily backups that should be consolidated the following day into a single daily backup. Consolidations of hourly, daily and weekly backups can occur at different stages however there should be approximately 6 months of backup's stored. This device is also responsible for the replication of all incremental backups to the cloud component.

The cloud component is a device located at a secondary site that a natural calamity or man-made disaster should not be able to affect. A minimum 10km distance should be adhered to. This device receives replicated incremental backups from the on premise device and is responsible for the long term storage, organization and consolidation of the replicated incremental backups.

1.2 Current State

1.2.1 Onsite Server Backups

Quairading Administration Office

The Shire of Quairading outsource the management of backup and recovery to PCS. The currently employed system consists of the following:

Server Name	Backup Technology	Job Details
QSC-FILE	Veeam	<p>Onto USB drives Monday-Friday (5 drives) Every 3 hours Mon-Fri 9am and 8pm Once Sat and Sun at 7pm</p> <p>Includes full virtual machine</p> <p>Daily notifications are emailed to backupreports@quairading.wa.gov.au (CEO Admin, EMCS and PCS)</p>
QSC-DATABASE	Veeam	<p>Onto USB drives Monday-Friday (5 drives) Every 3 hours Mon-Fri 9am and 8pm Once Sat and Sun at 7pm</p> <p>Includes full virtual machine</p> <p>Daily notifications are emailed to backupreports@quairading.wa.gov.au (CEO Admin, EMCS and PCS)</p>

Quairading Medical Clinic

The Shire of Quairading outsource the management of backup and recovery to PCS. The currently employed system consists of the following:

Server Name	Backup Technology	Job Details
QMP-FILE	Veeam	<p>Onto USB drives Monday-Friday (5 drives) Runs at 7:30pm</p> <p>Includes virtual server (snapshot of all data)</p> <p>Daily notifications emailed to Clinic Coordinators and PCS.</p>
QMP-FILE	Unknown	<p>Data copied onto stand-alone computer</p> <p>Manually run monthly</p> <p>Includes clinical and financial data</p>

1.2.2 Offsite Server Backups

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No backups are automatically replicated offsite. Every weekday the current days USB drive is taken home by EMCS. The other four USB drives are stored onsite in the Shire safe.

1.2.3 Retention Period

Quairading Administration Office.

The backups maintained by PCS are defined below:

	Number Kept Onsite	Number Kept Offsite	Explanation
Hourly	52	13	Each USB drive contains approximately 13 backup jobs. The previous days USB drive is taken offsite.
Daily	-	-	Daily backups for one week.
Weekly	-	-	-
Monthly	-	-	-
Biannual	-	-	-

These backups allow the ability to restore data at the file level for one week.

No scheduled Disaster Recovery tests were documented to have been completed.

Quairading Medical Clinic

The backups maintained by PCS are below:

	Number Kept Onsite	Number Kept Offsite	Explanation
Hourly	-	-	-
Daily	5	5	Daily backups for one week.
Weekly	-	-	-
Monthly	-	-	-
Biannual	-	-	-

These backups allow the ability to restore data at the file level or host level for one week.

No scheduled Disaster Recovery tests were documented to have been completed.

1.3 Future State Recommendations

Quairading Administration Office.

The current state needs immediate changes because it falls short of requirements set by the Shire of Quairading. The Shire of Quairading Disaster Recovery Plan is being created which will also dictate if the current solution meets the business requirements moving forward.

The following is industry best practice for data located on premise or in the cloud:

- 1.3.1 Onsite and offsite retention of backups
- 1.3.2 Continuous offsite replication to reduce Disaster Recovery RPO
- 1.3.3 Minimum hourly snapshots to reduce RPO
- 1.3.4 Hourly, Daily, Weekly, Monthly, Annual retention periods
- 1.3.5 Granular database and mailbox restoration
- 1.3.6 Ability to recover an entire server, not just data
- 1.3.7 Regular recovery testing
- 1.3.8 Daily backup notifications

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The current state needs immediate changes because it falls short of requirements set by the Shire of Quairading. The Shire of Quairading Disaster Recovery Plan is being created which will also dictate if the current solution meets the business requirements moving forward.

The following is industry best practice for data located on premise or in the cloud:

- 1.3.9 Onsite and offsite retention of backups
- 1.3.10 Continuous offsite replication to reduce Disaster Recovery RPO
- 1.3.11 Minimum hourly snapshots to reduce RPO
- 1.3.12 Hourly, Daily, Weekly, Monthly, Annual retention periods
- 1.3.13 Granular database and mailbox restoration
- 1.3.14 Ability to recover an entire server, not just data
- 1.3.15 Regular recovery testing

1.4 Budget Estimate

Quairading Administration Office

A backup and recovery solution will be a managed service, which means all costs are monthly on-going/operational costs.

See the following table for an indication of on-going costings.

For budget purposes, the data on premise component is set to a shared 2TB.

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Data on premise	\$10,010	\$10,010	\$10,010

Quairading Medical Clinic

A backup and recovery solution should be a managed service, which means all costs are monthly on-going/operational costs.

See the following table for an indication of on-going costings.

For budget purposes, the data on premise component is set to a shared 1TB.

For budget purposes the Microsoft Office 365 component is set to 5 users.

Description	2023-2024 Costs	2024-2025 Costs	2024-2025 Costs
Data on premise	\$7,530	\$7,530	\$7,530

2 Domain

2.1 Industry Best Practice

Utilisation of Microsoft Active Directory (AD) is key to centralised management of ICT networks.

Active Directory has four primary functions:

- 2.1.1 Authentication
- 2.1.2 Policy-based Administration
- 2.1.3 Security Policies for User Accounts
- 2.1.4 Directory for Publishing Shared Resources

A user can only be authenticated by a domain controller in the domain that hosts the user's account. Where possible, any application or network resource that utilises authentication for login or access should be integrated with the domain in order to use domain authentication. This reduces the amount of credentials a user is required to remember, allowing a "Single Sign-on" (SSO) environment.

Microsoft Group Policy allows ICT administrators to standardise and manage objects within a domain using policies that can be enforced. Such objects can include user accounts and computers. It is best practice for ICT policies to be created, deployed and enforced using Group Policy.

Some basic security policies that should apply to all domain user accounts include:

- 2.1.5 Password policies
- 2.1.6 Account lockout policies
- 2.1.7 Account expiry policies

Where possible, Active Directory should be utilised to publish connection information about shared resources. As an example, printer resources might be published in a domain to facilitate searches by users.

2.2 Current State

Quairading Administration Office

AD is present, reasonably well-structured and up to date. The Domain is utilising two security groups to handle NTFS permissions which does not reflect required permissions for the full data structure.

Group Policy is being utilised for items such as network drive mapping, software installation and Windows updates. There are a number of important policies that are missing.

A detailed naming structure for IT equipment exists which allows administrators to see who owns the equipment based on a role name. A naming structure for user accounts exists based on a role name which is not recommended.

FSMO (Flexible Single-Master Operations) roles and DHCP used by Active Directory are not split between servers. The internal domain name is quairading.local with a domain functional level of 2016.

Quairading Medical Clinic

AD is present, reasonably well-structured and up to date. The Domain is utilising two security groups to handle NTFS permissions which does not reflect required permissions for the full data structure.

Group Policy is being utilised for items such as network drive mapping, software installation and Windows updates. There are a number of important policies that are missing.

A less consistent naming structure for IT equipment exists which hinders administrators to see who owns the equipment based on a role name. A naming structure for user accounts exists based on a role name which is not recommended.

FSMO (Flexible Single-Master Operations) roles and DHCP used by Active Directory are not split between servers. The internal domain name is quairadingmed.local with a domain functional level of 2016.

2.3 Future State Recommendations

Quairading Administration Office

The following is industry best practice:

2.3.1 Usage of Access Based Enumeration for file shares

2.3.1.1 The intent is to limit the number of network drive mappings as much as possible. This will also enable greater control and auditing of access to corporate data.

2.3.2 Review of group policies to ensure Windows 10 and later versions of office are correctly handled

2.3.3 Implement user based accounts to move off role based accounts

2.3.4 Implement 2FA (two factor authentication) for remote access and Office 365 email.

2.3.5 Improve system log retention.

2.3.6 Implement removable media controls

Quairading Medical Clinic

The following is industry best practice:

2.3.7 Review of group policies to ensure Windows 10 and later versions of office are correctly handled

2.3.8 Implement user based accounts to move off role based accounts

2.3.9 Implement 2FA (two factor authentication) for remote access and Office 365 email

2.3.10 Improve system log retention

2.4 Budget Estimate

Quairading Administration Office

The majority of this work was implemented with the installation of the new server.

Quairading Medical Clinic

The majority of these costs will be bundled in with the implementation of the new server.

3 Antivirus

3.1 Industry Best Practice

An anti-virus solution should include the following features:

3.1.1 Scheduled full system scans

3.1.2 Real-time scanning

3.1.3 Behavioural monitoring

3.1.4 Anti-malware component(s)

Each of these four features should be configured and enabled for all machines requiring protection from viruses and malware.

Scheduled scans should be conducted a minimum of once per week and should be completed on all servers and client machines.

Real-time scanning can impact performance of key applications, particularly those that use a database. As such, many anti-virus vendors have released white papers on real-time scanning exclusion best practices. These best practices should be followed to avoid performance degradation of key/critical systems.

Behavioural monitoring should also always be enabled to prevent the increasingly popular ransomware viruses that encrypt data. Good anti-virus applications are able to detect when software is attempting to encrypt data and will block that application before any major damage can take place.

3.2 Current State

Quairading Administration Office

All computers and servers use Trend Micro Security. This product includes the following enabled features:

- 3.2.1 Smart Scan
- 3.2.2 Real-Time Scan
- 3.2.3 Web Reputation
- 3.2.4 URL Filtering (Office Hours)
- 3.2.5 Predictive Machine Learning

Scheduled scans are disabled for the computers and servers which is not recommended.

Hosted email for spam, phishing and malware protection is provided by the Trend Micro Hosted Email Security. This system works to ensure threats are detected and stopped before entering the corporate email systems.

Quairading Medical Clinic

Trend Micro Security is used on some computers and the server however, the license has expired. This product includes the following enabled features:

- 3.2.6 Smart Scan
- 3.2.7 Real-Time Scan
- 3.2.8 Web Reputation

3.2.9 URL Filtering (Office Hours)

3.2.10 Predictive Machine Learning

Scheduled scans are disabled for the computers and server which is not recommended.

Hosted email for spam, phishing and malware protection is provided by the Trend Micro Hosted Email Security via three Shire email addresses (qdgmedprac, qdgpracman, qdgnurse). This system works to ensure threats are detected and stopped before entering the corporate email systems. The Doctors use their own personal email addresses.

3.3 Future State Recommendations

Quairading Administration Office

The following is industry best practice:

- 3.3.1 Implement a more robust, configurable anti-virus platform
 - 3.3.1.1 Introduce scheduled scans on computers and servers
 - 3.3.1.2 Setup a strong reporting regime that is proactively monitored
- 3.3.2 Implement an email protection service from a different vendor
 - 3.3.2.1 Choose a vendor that resides in Australia
 - 3.3.2.2 Wider coverage is available to reduce risks with a different vendor

Quairading Medical Clinic

The following is industry best practice:

- 3.3.3 Implement a more robust, configurable anti-virus platform
 - 3.3.3.1 Introduce scheduled scans on computers and servers
 - 3.3.3.2 Setup a strong reporting regime that is proactively monitored
- 3.3.4 Implement an email protection service from a different vendor
 - 3.3.4.1 Choose a vendor that resides in Australia
 - 3.3.4.2 Wider coverage is available to reduce risks with a different vendor
 - 3.3.4.3 Move away from personal email addresses to bolster security

3.4 Budget Estimate

Quairading Administration Office.

This is covered under Microsoft 365 Business Premium Licensing for AV and Email Filtering.

Quairading Medical Clinic

This is covered under Microsoft 365 licensing and Managed Services Agreement for IT Support.

4 Corporate Applications

4.1 Industry Best Practice

Due to the numerous and varied nature of corporate applications, only generalized best practices can be listed in this section. Application vendors will normally release their own best practice white papers for specific applications which should be followed where possible.

A file management system (FMS) should continue to be employed to provide easy storage for relevant corporate data. If either on premise or hosted, a FMS requiring a back-end database should utilise Microsoft SQL and access to this data should be restricted as required. An alternative to a FMS is a document management system (DMS) such as Micro Focus Content Manager or SharePoint.

Financial software should continue to be employed to provide accounting and financial management capabilities. If either on premise or hosted, financial software requiring a back-end database should utilise Microsoft SQL and access to this data should be restricted as required.

CRM software should continue to be employed to provide membership and customer based capabilities. If either on premise or hosted, CRM and access to this data should be restricted as required.

A cyber awareness training platform should be implemented to help build employee's cybersecurity skills. An automated platform should train employees at a comfortable pace appropriate to their risk profile. Options such as an online test and simulations should be included.

4.2 Current State

Quairading Administration Office.

An enterprise resource planning (ERP) suite that encompasses all business areas named SynergySoft from the company ITVision has been implemented to provide easy storage, sorting and version control for relevant corporate data. They are also used to provide accounting and financial management capabilities. The current modules include Core Financials, Customer Service, Excel Integration, Payroll, Purchase Ordering, Purchase Requisitions/Extended Security, Rates and Property including Model & Pools, Receipting, Report Manager and Stores. SynergySoft utilises an IBM U2 Universal database for the back-end database and a customized published application for the front-end interface.

The Record Keeping Plan is awaiting final signoff. Records or document management is an integral part of any ERP. Currently soft copies of records are stored on F:Drive and hard copies of records are kept in a compactus and then archived onsite.

The SynergySoft licenses have been listed in Appendix D.

Quairading Medical Clinic.

The Medical Director application delivers access to telehealth, patient history, pathology and prescriptions. The CAT4 – Pen CS clinical audit tool is also used as it works alongside the Medical Director practice management software.

Records or document management is an integral part of any practice management software. Currently documents are scanned into a patient folder in the MedicalDirector application which resides on the server.

4.3 Future State Recommendations

Quairading Administration Office.

The current state meets most requirements although the development of a four-year road map is required to outline the logical transition from SynergySoft to Altus. As part of this journey which would be module by module, it would be appropriate to go to market for possible “best of breed” alternatives.

Although in the cloud, the Microsoft technology stack is a platform worth investigating. Current relevant products include Microsoft Office 365, SQL Server and Dynamics 365. As other councils have implemented or are currently investigating the Microsoft technology stack, it would be prudent to ask a select number of other councils how their experiences have been with their journey. This conversation should include SharePoint as a document management solution.

To improve functionality and appearance on mobile devices (mobility), works should proceed with the current provider on the corporate website. Online payment options is one example.

A cyber awareness training platform should be implemented which hooks into HR. A solution that can start at any time for a new employee and that never stops is ideal. The idea is to reinforce knowledge without overwhelming the employee.

To improve workflow and productivity a project management tool like Trello should be investigated.

Quairading Medical Clinic.

The current state meets most requirements although the continual upgrade of software through a maintenance program is of importance. To confirm optimum performance and security requirements, a support call should be raised for the MedicalDirector software and the CAT4 – Pen CS software.

Migration to BestPractice with is a very popular Medical Based Software solution is strongly recommended by the Medical Clinic to ensure maximum efficiency.

4.4 Budget Estimate

Quairading Administration Office.

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
SynergySoft Suite	\$34,386	\$35,589	\$36,835
Altus Suite	\$58,283	\$40,927	\$41,231
Website Improvements	\$33,132	\$10,977	\$7,200
Adobe Creative Cloud	\$5,800	\$6,000	\$6,500
Cyber Awareness Training		\$3,000	\$3,500

*Pricing excludes GST and is a budget estimate only.

Quairading Medical Clinic.

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
MedicalDirector	\$1,800	\$1,800	
BestPractice		\$1,800	\$1,800
Cyber Awareness Training			\$500

*Pricing excludes GST and is a budget estimate only.

5 IT Support Arrangements

5.1 Industry Best Practice

Outsourced IT services should include the following;

- 5.1.1 Scheduled onsite support visits;
- 5.1.2 The ability to log support requests which are monitored and attended to;
- 5.1.3 Access to 24x7x365 support with tight service level agreements;
- 5.1.4 Proactive monitoring of the ICT network during business hours.

IT service providers should be vendor-certified relevant to any managed technology and have enough personnel to be able to adjust support hours in line with seasonal shifts in IT requirements.

Organisations that employ the service of third party IT support providers should regularly review the support schedule to ensure it fits the business requirements.

5.2 Current State

The Shire of Quairading has contracted PCS to provide adhoc IT services. Support arrangements include;

- 5.2.1 Adhoc Level 2 and Level 3 support via email or phone call
- 5.2.2 After hours support by calling a mobile number

As PCS do not have a helpdesk or ticketing system, the Shire of Quairading cannot be granted access to a helpdesk portal to review Helpdesk calls. No scheduled onsite support is offered.

The enterprise resource planning application (SynergySoft/Altus) is supported by PCS and IT Vision.

5.3 Future State Recommendations

The current IT services support arrangements fall well short of current and future needs. A proactive approach is required as more reliance is placed on the IT systems. Some examples of requirements would include real time monitoring of infrastructure to record uptime and availability along with a management style report that highlights ongoing expenditure and IT support service statistics.

The Office of the Auditor General (OAG) are conducting their General Computer Controls (GCC) audit across WA. The Shire of Quairading should act now to align themselves with a suitably certified and qualified IT service provider.

The inherent cyber risks are increasing at a rapid rate therefore strategy and direction are imperative to plan and implement risk mitigations. All changes recommended in this category are essential and should be undertaken now.

With the appropriate technology changes, the Quairading Administration Office and the Quairading Medical Clinic could share IT support arrangements.

5.4 Budget Estimate

Quairading Administration Office.

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
IT Support	\$34,647	\$34,647	\$34,647

Quairading Medical Clinic.

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
IT Support	\$10,464	\$10,464	\$10,464

6 IT Disaster Recovery Plan

6.1 Industry Best Practice

An IT Disaster Recovery Plan must set out the mitigation, preparation, warning, response and business continuity arrangements for all core IT systems.

The IT Disaster Recovery Plan must also:

- 6.1.1 Provide the information and procedures necessary to

- 6.1.1.1 Respond to an occurrence
- 6.1.1.2 Notify personnel
- 6.1.1.3 Assemble recovery teams
- 6.1.1.4 Recover data
- 6.1.1.5 Resume processing at the current or alternate site as soon as possible after a disaster has been declared
- 6.1.2 Create a disaster recovery structure strong enough to provide guidance to all interrelated groups, yet flexible enough to allow staff and teams to respond to whatever type of disaster may occur.
- 6.1.3 Identify those activities necessary to resume full services at the reconstructed disaster site or new permanent facility.
- 6.1.4 Establish a return to a “business as usual” environment.

Continual review of the IT Disaster Recovery Plan should occur annually – or with significant business change – with the aim to improve existing resilience against damage to the business in the event of an actual disaster or outage.

6.2 Current State

The Shire of Quairading do currently have an IT Disaster Recovery Plan but this was last updated in 2020. This needs to be updated for the implementation of new server, hardware, networking that is applicable for the Shire.

Currently there is no IT Disaster Recovery Plan for the Quairading Medical Clinic.

6.3 Future State Recommendations

The IT Disaster Recovery Plan is somewhat dependent on ICT Strategic Plan to ensure it meets its requirements. The IT Disaster Recovery Plan will be created and formed with 4 months of the approval of the ICT Strategic Plan

6.4 Budget Estimate

Quairading Administration Office and Quairading Medical Clinic

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
IT DR Plan Creation (QAO)	\$2,970		
IT DR Plan Creation (QMC)		\$4,950	

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
IT DR Plan Refresh (QAO)		\$2,495	\$2,495
IT DR Plan Refresh (QMC)			\$1,950

7 Internet Gateway

7.1 Industry Best Practice

A business grade internet gateway must be capable of providing advanced security services in addition to standard routing and port forwarding functionality.

Examples of advanced security services include:

- 7.1.1 Gateway Antivirus
- 7.1.2 Gateway Antispyware
- 7.1.3 Intrusion Prevention
- 7.1.4 Application Intelligence and Control
- 7.1.5 Web/Content Filtering
- 7.1.6 DPI SSL Scanning

These services deliver intelligent, real-time network security protection against the latest blended threats, including viruses, spyware, worms, Trojans, software vulnerabilities and other malicious code.

Application Intelligence and Control provides granular control and real-time visualization of applications to guarantee bandwidth prioritization and ensure maximum network security and productivity.

7.2 Previous State

Quairading Administration Office

A Huawei B315s router terminates a Telstra 4G Internet link. A Ubiquiti Edge Lite-3 router with TPLink TD-W9970 router also terminates an ADSL Internet link. None of these devices are business grade and do not offer advanced security features.

Quairading Community Resource Centre

As an Ubiquiti outdoor point-to-point wireless link exists back to the Admin Office, no Internet Gateway is used.

Quairading Depot

As an Ubiquiti outdoor point-to-point wireless link exists back to the CRC, no Internet Gateway is used.

Quairading Medical Clinic

A TPLink TD-W9970 router terminates an ADSL Internet link. This device is not business grade and does not offer advanced security features.

7.3 Future State Recommendations

Quairading Administration Office

New firewall hardware must be implemented. A move to monthly subscriptions known as “Security as a Service” is now commonplace amongst many security vendors. This removes the capital expenditure and removes the risk related to firewall hardware being unable to cope with higher speed Internet connections. As Internet services increase their speeds, regular review of the firewall performance is required to ensure the hardware device is not limiting the speed of the new Internet connections.

Quairading Community Resource Centre

This current solution is suitable but only if it is under some form of management contract. In the event that hardware fails due to age or weather a service level agreement must exist to guarantee suitable restoration times. As all traffic traverses this network back through the Administration Office, it is imperative that the Administration Office utilises appropriate firewall hardware.

Quairading Depot

This current solution is suitable but only if it is under some form of management contract. In the event that hardware fails due to age or weather a service level agreement must exist to guarantee suitable restoration times. As all traffic traverses this network back through the Community Resource Centre and onto the Administration Office, it is imperative that the Administration Office utilises appropriate firewall hardware.

Quairading Medical Clinic

A network re-design project will confirm if the Ubiquiti wireless network can extend from the Community Resource Centre onto the Medical Clinic on Harris Street. If this is viable, this will connect the Medical Clinic just like the Depot. All traffic will pass back through the Administration Office.

If this is unachievable, the Medical Clinic will require new hardware firewall just like the Quairading Administration Office. A move to monthly subscriptions known as “Security as a Service” is now common place amongst many security vendors. This removes the capital expenditure and removes the risk related to firewall hardware being unable to cope with higher speed Internet connections. As Internet services increase their speeds, regular review of the firewall performance is required to ensure the hardware device is not limiting the speed of the new Internet connections.

NOTE: As of Q1 2023, these above changes have all been implemented.

7.4 Budget Estimate

Quairading Administration Office.

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Admin Office	\$2,280	\$2,280	\$2,280

*Pricing excludes GST and is a budget estimate only.

Quairading Medical Clinic

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Medical Clinic	\$1,740	\$1,740	\$1,740

*Pricing excludes GST and is a budget estimate only.

8 ISP Links

8.1 Industry Best Practice

Industry best practices dictate most organisation’s IT infrastructure should have a measure of redundancy to as many components as possible – including (and especially) connections to the Internet.

A business grade Internet connection suitable for the Shire of Quairading should have the following characteristics:

- 8.1.1 Provided by a Tier 1 or 2 ISP
- 8.1.2 Guaranteed bandwidth of at least 100Mbps (preferred 100Mbps or higher at main office)
- 8.1.3 100Mbps (preferred 250Mbps) for a full cloud/hosted platform
- 8.1.4 Guaranteed contention ratio

- 8.1.5 Synchronous uplink
- 8.1.6 Delivered over fibre optic
- 8.1.7 Corporate/Enterprise level SLA

A secondary Internet connection should also be provided by a different ISP than the primary connection. The secondary connection can be a slower/lower specification service as its main function is to act as a backup connection when the primary connection fails.

In addition to failover capability, a secondary Internet connection can be utilised for load balancing. Low priority Internet services can be routed through the secondary connection to free up bandwidth from the primary connection.

8.2 Previous State

Quairading Administration Office

The recent installation of the Telstra NextG Internet service at the Admin Office has helped with video conferencing and general web browsing as the existing ADSL link was underperforming. Unfortunately, other users share the service so there is no guarantee of bandwidth or performance. This second link is a temporary fix to offer a better user experience.

The following ISP links are currently active:

Site	Connection Type	Speed	Monthly Cost
Admin Office	Telstra ADSL	5Mbps/0.5Mbps	
Admin Office	Telstra NextG	20Mbps/20Mbps	

Quairading Medical Clinic.

The following ISP links are currently active:

Site	Connection Type	Speed	Monthly Cost
Medical Clinic	Telstra ADSL	5Mbps/0.5Mbps	

8.3 Current State Recommendations

Quairading Administration Office

A fibre optic Internet service is too expensive as the primary Internet link. In 2022, the Shire connected all buildings to CRISP, a regional wireless provider with a wireless enterprise link (60Mbps/60Mbps).

This change has dramatically increased the reliability and performance of the IT systems. This type of bandwidth will cater for automatic offsite backups for disaster recovery, secure remote access for staff and the introduction of some hybrid cloud options.

Quairading Medical Clinic

A network re-design project will confirm if the Ubiquiti wireless network can extend from the CRC onto the Medical Clinic on Harris Street. Unfortunately this option is not possible.

Similar links have been implemented for the Quairading Medical Clinic as the Quairading Administrative Office

8.4 Budget Estimate

Quairading Administration Office.

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Primary Link (Wireless)	\$2,028	\$2,028	\$2,028
Secondary Link (NextG)	\$900	\$900	\$900

*Pricing excludes GST and is a budget estimate only.

Quairading Medical Clinic.

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Primary Link (Wireless)	\$1,080	\$1,080	\$1,080
Secondary Link (NextG)	\$900	\$900	\$900

*Pricing excludes GST and is a budget estimate only.

9 Uninterruptable Power Supply

9.1 Industry Best Practice

Uninterruptable Power Supplies (commonly referred to as UPS) deliver online power quality and scalable battery runtimes for key IT infrastructure. In addition to providing clean power to IT equipment, a UPS is primarily utilised to keep expensive IT hardware powered on during a power outage.

High-grade UPS equipment should be installed to keep IT hardware in the main server rack(s) online for at least 1 hour during a power outage. If a power outage extends longer than the battery life of the UPS equipment, the UPS hardware should be set to gracefully shutdown all virtual servers prior to host hardware and other equipment losing power.

High-grade UPS equipment should also be equipped with modules to provide additional features such as environmental monitoring, network management and email notifications. High-grade UPS solutions address internal faults/outages by using a standby module. Alternatively, two units can be used to offer hardware redundancy.

Lower-grade UPS equipment should be installed in any location with network equipment such as switches, firewalls or modems and provide an uptime of at least 30 minutes in the event of a power outage.

Any UPS equipment powering core IT infrastructure should be tested annually to ensure indicated up-times are accurate.

9.2 Current State

Quairading Administration Office

An Eaton 9PX 2000 RT UPS with no Extended Battery Module (EBM) is installed in the Administration Building computer room. This UPS is rated at 2000VA and power rails ensures all IT hardware in the server cabinets are powered via the UPS. This UPS will provide approximately 30 minutes uptime for the IT infrastructure in the event of a power outage.

This UPS does have the ability to communicate on the network but automatic shutdown procedures and parameters are not configured in cases of prolonged power outages. No shutdown can be automatically performed based on extreme temperature and/or humidity and no email notifications are configured.

Quairading Medical Clinic

A PowerShield Centurion 1000 UPS is installed in the Medical Clinic under the reception desk. This UPS is rated at 1000VA and only powers the QMP-FILE server. This UPS will provide approximately 15 minutes uptime for the QMP-FILE server in the event of a power outage.

This UPS does have the ability to communicate on the network but automatic shutdown procedures and parameters are not configured in cases of prolonged power outages. No shutdown can be automatically performed based on extreme temperature and/or humidity and no email notifications are configured.

9.3 Future State Recommendations

Quairading Administration Office

The UPS equipment partly meets the Shire of Quairading's current requirements. An uptime test should be completed by the end of 2020 to ensure uptimes indicated are accurate. A failed test will confirm if new batteries are required.

As there is already an SNMP card (network management) installed, an EMP card (temperature probe) should be installed. This will deliver more control and allow the UPS to shut itself off and on based on set temperature and humidity readings.

Quairading Medical Clinic

The UPS equipment partly meets the Medical Clinic's current requirements. It provides basic power filtering but not advanced shutdown features and will need to be replaced to ensure that IT can appropriately manage the network.

As the Medical Clinic does not use the Shire of Quairading's IT infrastructure then the UPS will need a SNMP card (network management) installed and EMP. This will deliver more control and allow the UPS to shut itself off and on based on set temperature and humidity readings.

9.4 Budget Estimate

Unfortunately, an existing UPS warranty cannot be extended so servicing the UPS is the cheapest alternative to replacing the UPS.

Quairading Administration Office

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
EMP Card		\$395	
Batteries			\$1,250

*Pricing excludes GST and is a budget estimate only.

Quairading Medical Clinic

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
SNMP Card			\$795
EMP Card			\$395
Eaton 9PX UPS			\$2,950

10 Computer Room

10.1 Industry Best Practice

The room(s) containing core IT infrastructure should have the following properties:

- 10.1.1 Independent and redundant air-conditioning
- 10.1.2 Backup ventilation fan
- 10.1.3 Dedicated 15A+ (or higher) power circuit for each UPS
- 10.1.4 Sufficient storage for IT hardware, spare cabling and software
- 10.1.5 Non-carpet flooring to minimise dust
- 10.1.6 Lockable door

In addition to the above, a desk and chair should be provided for any IT support staff that attend site if possible.

10.2 Current State

Quairading Administration Office

A 28RU cabinet is located in a shared multi use storage/archive room. The room door is locked. There is a split system air conditioning installed in this room, however, this is only in use during business hours.

Data cabling is well set out and labelled correctly with ample cable management. Most communications equipment is rack mounted although the UPS which is designed to be rack mounted, is installed on its side with the rail kit still in the box. Unfortunately, the HPE server is not rack mounted.

Quairading Community Resource Centre

As the Community Resource Centre is a multi-tenanted building, the Shire of Quairading equipment is located in a wall-mounted cabinet in the storeroom. This wall-mounted cabinet contains equipment for all tenants making it less secure.

Data cabling is messy as no cable management is used.

Quairading Depot

Quairading Depot was upgrading with a new rack at the end of 2022. Data cabling is well managed and fully documented.

Quairading Medical Clinic

A small network rack has been installed to help manage some of the IT Equipment like Management PC, Switch, AP, Sophos Firewall/UTM however large IT equipment including the UPS & server are located underneath the reception desk. This location is not secure.

10.3 Future State Recommendations

Quairading Administration Office

The shared multi use storage/archive room means the door to this room cannot change and must stay locked at all times with the key documented and stored safely.

The door to the right hand side of the cabinet must be re-installed and the key to the cabinet documented and stored safely.

The replacement server is rack mounted and cabling has been improved in 2022.

Quairading Community Resource Centre

As the Community Resource Centre is a multi-tenanted building, it is very difficult to segregate the equipment for all tenants.

As the data cabling is messy and no cable management is used, shorter CAT6a cables should be used to help make the install cleaner and easier to fault find.

Documentation needs to be updated with Visio Maps created for better remote support options.

Quairading Depot

No further changes are required for this.

Quairading Medical Clinic

While most of the networking equipment has been centralised in the small network cabinet there is not enough room for servers and UPS to be relocated.

Without significant cost and recabling there is no practical solution for installing a larger cabinet that could house the server.

10.4 Budget Estimate

Quairading Administration Office

This has been implemented with the new server.

Quairading Community Resource Centre

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Supply CAT6a Cables		\$500	
Project Labour		\$2,500	

Quairading Depot

This has been completed in Dec22/Jan23

Quairading Medical Clinic

This has been completed in Nov-Dec 2022

11 Local Area Network

11.1 Industry Best Practice

Core network switching should provide the following:

- 11.1.1 Layer 3 routing functionality
- 11.1.2 Management interface
- 11.1.3 Power over Ethernet
- 11.1.4 At least 1000Mbps (1 gigabit) connectivity to all computers
- 11.1.5 At least 10000Mbps (10 gigabit) connectivity to all servers

Additionally, core network switching should always be configured in a redundant stack.

Local area networks should utilise VLAN encapsulation for logical segregation of network traffic.

Internal Wi-Fi access points can be configured on different frequency ranges. Each range is divided into channels. Fine tuning can increase performance gains. Wireless network access can be configured using SSIDs, VLANs and user authentication to increase security.

Public/visitor Wi-Fi networks should also be securely segregated from corporate networks via VLAN encapsulation.

11.2 Previous State

Quairading Administration Office

There is a HPE ProCurve 2530-24G PoE switch rack mounted inside the 28RU cabinet located in the shared multi use storage / archive room. This switch is almost at capacity.

There is also a Netgear FS116 switch just hanging inside the 28RU cabinet located in the shared multi use storage / archive room. 8 of the 16 ports are free. This switch does not support PoE, remote management or gigabit.

Internal Wi-Fi is delivered through a TP-Link TD-W9970 router with two authentication methods offered. This Wi-Fi network is the corporate network and not segregated for visitors.

Quairading Community Resource Centre

There is a HPE ProCurve 2530-24G PoE switch rack mounted inside the wall-mounted cabinet in the Community Resource Centre storeroom. 4 of the 24 ports are free.

Internal Wi-Fi is delivered through the Community Resource Centre and the Shire uses this network to print to the multi-function printers. No VLAN exists on the HPE ProCurve 2530-24G PoE switch.

Quairading Depot

There is a TP-Link 1500G-10MPS switch located in the office of the Manager, Works & Services. 4 of the 8 ports are free.

Internal Wi-Fi is delivered through a Ubiquiti AP AC-Pro. This Wi-Fi network is the corporate network and not segregated for visitors.

Quairading Medical Clinic

There is a Netgear GS116 switch located underneath the reception desk. 3 of the 16 ports are free.

Internal Wi-Fi is delivered through a TP-Link TD-W9970 router. This Wi-Fi network is the corporate network and not segregated for visitors.

11.3 Current State Recommendations

All Commercial Shire Buildings

To address current and future security requirements, standardised on networking equipment needs to be purchased.

All switching equipment should be from the same vendor to make it easy for the IT service provider to manage remotely. A new network subnet design (IP Addressing) should be implemented that will lead to secure networks (VLANs) being created.

To meet security requirements, a project should involve implementing 802.1X port-based Network Access Control (PNAC) for all switches. This will greatly improve network security and meet OAG GCC requirements.

Internal Wi-Fi equipment should be from the same vendor to make it easy for the IT service provider to manage remotely.

Switching and WiFi has been upgraded to Layer 3 Network Switches from Ubiquiti and also deployed are Ubiquiti Wireless Access Points.

To meet security requirements, a project will involve implementing Extensible Authentication Protocol (EAP) for the internal Wi-Fi. This will greatly improve network security and meet OAG GCC requirements. This is the only section with is still outstanding for the Quairading Administration Office.

11.4 Budget Estimate

Quairading Administration Office

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
EAP Security Configurations		\$1,500	

*Pricing excludes GST and is a budget estimate only.

12 Desktops / Laptops

12.1 Industry Best Practice

Standard IT practices and return on investment analysis from Industry bodies such as Gartner Group dictate a three-year lifecycle for standard business desktops. These industry standards are reflected by the tier one companies such as HP, Lenovo and DELL who generally ship such machines with a standard three-year onsite warranty.

A replacement business desktop should be obtained from a tier one vendor such as Dell, HP or Lenovo who have a three-year hardware life cycle. This ensures a small number of Standard Operating Environment's (SOE) can be maintained across the three-year desktop lifecycle.

A shift away from small form factor desktop machines to "mini desktop" frees up office desk space for all staff. These machines are also more energy efficient and have silent operation.

A true business laptop will ensure standard accessories including docking stations, and extended batteries are available.

12.2 Current State

Quairading Administration Office, Community Resource Centre & Depot

The Shire of Quairading currently utilise a mix of retail and business computers which include HP, Asus, Lenovo, Toshiba and white boxes (no name brand). The fleet numbers approximately 20 computers.

Windows 10 and Office 2016 has been deployed with Microsoft 365 Business Essentials.

Windows updates for computers and servers is managed by Wallis Computer Solutions

Third-party patching (Java, Adobe, Flash etc.) has been implemented by Wallis Computer Solutions.

Quairading Medical Clinic

The Medical Clinic currently utilise a mix of business computers, which include Dell and HP. The fleet numbers approximately 5 computers.

Windows 10 and Office 2016 has been deployed with Microsoft 365 Business Essentials.

Windows updates for computers and servers is managed by Wallis Computer Solutions.

Third-party patching (Java, Adobe, Flash etc.) has been implemented by Wallis Computer Solutions.

12.3 Future State Recommendations

Quairading Administration Office, Community Resource Centre & Depot

The Shire will be standardising the purchasing of computers. In an ideal world one manufacturer is chosen which can reduce the overheads involved with managing a fleet of computers from a driver/support point of view. Bulk purchasing of computers can lead to discounted pricing. The purchasing of computers can be staggered across multiple years so that the fleet is refreshed regularly without requiring a big capex investment. The Shire will compare the leasing model with outright purchasing during the next computer purchase.

Staff will be given a mini desktop if they never leave the office or require a fixed desktop setup.

Customer facing front office staff are an example of this. To increase mobility and productivity, key staff should be supplied a laptop with accessories such as a docking station and two LCD screens. The laptop is taken home to be securely used remotely and placed back into the docking station when in the office. Most importantly, every user should only have one computer.

The Shire will research implementing an SOE which would include Windows 11 Professional with Office 365. A migration to Office 365 has been completed in 2022. Office 365 will provide additional capabilities such as Microsoft Teams and SharePoint Online.

Please refer to Appendix A for a complete list of desktop/laptop hardware replacements and relevant information.

Quairading Medical Clinic

The Shire will investigate standardising the purchasing of computers. In an ideal world one manufacturer is chosen which can reduce the overheads involved with managing a fleet of computers from a driver/support point of view. The purchasing of computers can be staggered across multiple years so that the fleet is refreshed regularly without requiring a big capex investment.

A mini desktop should be supplied to key staff that never leave the office or require a fixed desktop setup. Customer facing front office staff and back office staff are an example of this. To increase mobility and productivity, the Doctor should be supplied a laptop with accessories such as a docking station and two LCD screens. The laptop is taken home to be securely used remotely and placed back into the docking station when in the office.

The Shire will investigate implementing an SOE which would include Windows 10 Professional with Office 365.

Budget Estimate

Description	Current Replacement Costs
Desktop Mini with Accessories and Screens	\$2,000
Business Laptop with Accessories and Screens	\$2,750
Business Tablet with Accessories and Screens	\$3,500

Quairading Administration Office, Community Resource Centre & Depot

See the following table for an indication of on-going costings. These costings are excluding related project labour:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Desktop Mini	\$4,000	\$2,000	\$2,000
Business Laptop	\$5,500	\$8,250	\$8,250
Business Tablet	\$7,000	\$7,000	\$7,000
Office 365	\$15,018	\$15,985	\$16,865

*Pricing excludes GST and is a budget estimate only.

Quairading Medical Clinic

See the following table for an indication of on-going costings. These costings are excluding related project labour:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Desktop Mini	\$2,000		
Business Laptop		\$2,750	
Office 365	\$1,350	\$3,250	\$3,495

*Pricing excludes GST and is a budget estimate only.

13 Servers

13.1 Industry Best Practice

Physical server hardware should be specified which supports a virtual server environment, to provide the best possible return on investment on server hardware via increased utilisation. If uptime is essential the N+1 architecture delivers a minimum of two physical servers using a software defined storage solution.

The greater IT Industry has observed a large shift to virtual server environments, which started nearly a decade ago in the enterprise market space. This trend has migrated rapidly down to the small to medium business in recent times as vendors target their pricing and products towards this more price sensitive end of the market.

Current offerings of server hardware provide significant excess performance capability which can be employed to support multiple simultaneous servers on the one server. This approach makes the best use of expensive server hardware, allows effective management of shared server storage and can be leveraged to reduce downtime.

Physical server hardware should employ as many redundancy options as possible, such as:

- 13.1.1 Redundant power supplies
- 13.1.2 Redundant cooling
- 13.1.3 Redundant 10GB network connectivity
- 13.1.4 Redundant hard drive configurations (RAID5 + hot spare disks)

Virtual servers should be built to a Windows Server 2019 standard as a minimum.

13.2 Previous State

Quairading Administration Office

At around the time of August 2017 the server infrastructure received a refresh. The warranty expired in October 2020, at which time the server infrastructure was three years old.

The Shire of Quairading has one HPE ML350 G9 physical rack-mountable server hosting a Microsoft Hyper-V virtual environment. The physical server has:

- 13.2.1 Dual Xeon E5-2620v4 processors
- 13.2.2 64GB RAM

13.2.3 4 x 600GB 10K SAS hard drives in a RAID10

13.2.4 Redundant power supplies

13.2.5 Remote port for monitoring

3 virtual servers are running within the Microsoft Hyper-V virtual environment:

Hostname	Description
QSC-FILE	Windows Server 2016 Standard Universe, Exchange 2016, File Server, DC, DNS, DHCP
QSC-DATABASE	Windows Service 2016 Standard SynergySoft, Universe (Terminal Services)
QSC-ALTUS	Windows Server 2016 Standard Altus Web Services

This server was replaced in Q3 2022 by Wallis Computer Solutions.

Quairading Medical Clinic

The Quairading Medical Clinic current has 1x HP ProLiant ML350 Gen9 which we believe was purchased around 2018-2019 but records are vague. SN: SGH751TV0N

13.2.6 Dual Xeon E5-2620v4 processor

13.2.7 32GB ECC DDR RAM

13.2.8 2 x 600GB SAS hard drives (RAID1)

13.2.9 Redundant power supplies

2 virtual server is running within the Microsoft Hyper-V virtual environment:

Hostname	Description
QMP-FILE	Windows Server 2016 Standard File Server, DC, DNS, DHCP
QMP-TS	Windows Server 2016 Standard Remote Desktop Services

13.3 Current State Recommendations

Quairading Administration Office

A Server Migration/Replacement with Dell PowerEdge R500 Server and Migration to O365 has occurred in 2022.

Quairading Medical Clinic

Quairading Medical Clinic previously shared Exchange email services with the Shire but this has been since migrated to their own Office365 Tenant.

Server replacement will be required in 2024-25 unless a suitable cloud solution can be found.

13.4 Budget Estimate

Quairading Administration Office

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Server Replacements	\$45,000		
Exchange Online Migration	\$5,000		

*Pricing excludes GST and is a budget estimate only.

Quairading Medical Clinic

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
Server Replacements			\$25,000
Exchange Online Migration	\$2,000		

*Pricing excludes GST and is a budget estimate only.

14 Storage

14.1 Industry Best Practice

Two common forms of storage exist being SAN hardware or local disk server storage.

SAN hardware should always be capable of easy expansion for future data requirements, by allowing additional hard drives and hard drive shelves to be installed. This flexibility will ensure a major upgrade to server infrastructure will not be required in the standard server/SAN life cycle. The SAN is one of the most vital components of the IT infrastructure and therefore should employ as many redundancy options as possible, such as:

- 14.1.1 Redundant storage processors
- 14.1.2 Redundant power supplies
- 14.1.3 Redundant cooling
- 14.1.4 Redundant 10GB network connectivity
- 14.1.5 Redundant hard drive configurations (RAID5 + hot spare disks)

Local disk server storage should always be capable of easy expansion for future data requirements, by allowing additional hard drives to be installed. Local disk server storage should employ redundancy options such as:

14.1.6 Redundant hard drive configurations (RAID5 + hot spare disks)

14.1.7 Software defined storage solution (two or more physical servers)

14.2 Current State

Quairading Administration Office

The Shire of Quairading Dell R550 meets all requirements although it is server vs specific SAN.

Quairading Medical Clinic

The Shire of Quairading HPE ML350 G9 physical server allows for easy expansion for future data requirements, by allowing the installation of additional hard drives. Physical storage can then be dynamically allocated amongst the various virtual servers to maximise the use of the storage. This flexibility will ensure a major upgrade to server infrastructure is not required in the current server life cycle.

14.3 Future State Recommendations

Quairading Administration Office

The Shire of Quairading Dell R550 meets all requirements with warranty due for expiry in 2029.

Quairading Medical Clinic

The HPE ML350 G9 physical server warranty has expired however is still adequate for the task. Due to the significant cost replacement is planned for 2024-25. It is not ideal

14.4 Budget Estimate

Quairading Administration Office

The Shire of Quairading Dell R550 meets all requirements and no additional costs for the foreseeable future.

Quairading Medical Clinic

Costs for storage for Quairading Medical Clinic are covered under server replacement in 13.4

15 IP Telephony

15.1 Industry Best Practice

IP Telephony is the technology that makes it possible to have telephone conversations over the Internet or a dedicated IP network (instead of dedicated voice transmission lines).

A dedicated IP network should be utilised in order to guarantee quality, as voice calls over the Internet take a “best effort” approach, which can result in poor or degraded quality.

Consideration should be given for a VOIP PABX, which allows for control and configuration of the telephony system by internal staff or contracted support staff.

Client computers should be connected to the local area network via the associated VOIP phone handset, therefore all VOIP phone handsets should allow gigabit connectivity to the network. This approach reduces switching and cabling costs.

15.2 Previous State

Quairading Administration Office

The Shire of Quairading currently utilise two Telstra ISDN2 digital services together with a Mitel 3300 CX II controller. The Mitel is a physical system located in the server cabinet and is not currently under a service contract. The current Mitel has approximately 10 handsets distributed across the Admin Office, Depot and CRC. Currently all calls are routing through the two Telstra ISDN2 services located in the Admin Office. No Internet based SIP provider is used for Internet based phone calls.

Quairading Medical Clinic

The Medical Clinic currently utilises services via the NEC SL1100 PBX. An answering machine and fax machine are present. No Internet based SIP provider is used for Internet based phone calls. 5 phones are active and are able to transfer calls between them.

15.3 Current State Recommendations

Quairading Administration Office & Medical Clinic

A 3CX VoIP Phone System has been deployed for both Administration Office and Medical Clinic. Services have been migrated to the new carrier with the ability for remote access, call routing between locations, voicemail and remote provisioning of devices.

This is all setup, configured, managed by Wallis Computer Solutions.

This is a fixed price 60 month agreement including handsets, calls and support.

15.4 Budget Estimates

Quairading Administration Office & Medical Clinic

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
3CX Phone System	\$8,712	\$12,210	\$12,210

NOTE: 2022-23 was a part year. All prices are fixed.

16 Printing

16.1 Industry Best Practice

Printing is one of the most critical functions of an IT system and consequently can be one of the most frustrating when not setup correctly. One or two large duty cycle multifunction copiers should be deployed on each floor or central location within the main office. Printer drivers should be deployed utilising universal drivers where possible, via Microsoft group policy.

Where required, additional printers can be deployed, however these should always be laser printers, sourced from a Tier 1 vendor and capable of connecting to the local area network.

The printing technology should also be capable of providing a “secure print” feature, which prevents documents from being physically printed, until a staff member logs into the printer and “releases” the print job. This allows for secure and confidential printing in a centralised printing environment.

16.2 Current State

Quairading Administration Office

Centralised printing has been implemented using a mixture of printers with the Canon iR-ADV 7765 being the central multi-function printer. Secure Print has not been implemented.

One smaller HP LaserJet printers are also in operation.

A Kyocera M4132idn has been deployed in 2023 to the Depot.

Quairading Medical Clinic

A HP M225dn has been setup at the Medical Clinic as the central printer.

Doctors have access to their own printers.

Future State Recommendations

Quairading Administration Office

The Canon C7765 has its final payment due in May 2024.

It is expected that it will be replaced in 2024-25 Financial Year, most likely on a lease for something with a similar cost.

The depot printer installed in 2023 should be fine for ~ 5 Years.

Quairading Medical Clinic

All printers at the Quairading Medical Clinic are dated and needing to be replaced. Doctors need to have dual-tray network printers for management, control and ease of support.

It is recommended that

16.3 Budget Estimates

Quairading Administration Office

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
MFP Purchase	\$3,729	\$3,729	\$3,729

*Pricing excludes GST and is a budget estimate only.

Quairading Medical Clinic

See the following table for an indication of on-going costings:

Description	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
MFP Purchase		\$950	\$950

*Pricing excludes GST and is a budget estimate only.

APPENDIX A: WORKSTATIONS / TABLETS / LAPTOPS

Agent Name	Agent Type	Agent Manufacturer	Agent Mainboard	Windows Version	Agent User	Agent Serial Number	Purchased
SOQ-LP4WX64	Laptop	LENOVO	81AX	Windows 10 Pro	SOQ\jen.green	R90QE1QS	17/18
SOQ-WS2WX64	WorkStation	HP	HP EliteDesk 800 G3 SFF	Windows 10 Pro	SOQ\jason.mashford	AUD7320BNG	17/18
SOQ-WS3WX64	WorkStation	HP	HP EliteDesk 800 G3 SFF	Windows 10 Pro	SOQ\debra.matthews	AUD8070FY9	17/18
SOQ-LP5WX64	Laptop	LENOVO	81YE	Windows 10 Pro	SOQ\wrf	PF26FWVM	18/19
SOQ-LP6WXI	Laptop	LENOVO	81YE	Windows 10 Pro	SOQ\sarah.caporn	PF271AF6	18/19
SOQ-LP9WX64	Laptop	LENOVO	81AX	Windows 10 Pro	SOQ\sarah.caporn	R90QZ9YN	18/19
SOQ-LP10WXI	Laptop	Acer	TravelMate P215-52	Windows 10 Pro	SOQ\jason.lilleyman	03800343	19/20
SOQ-LP11WX64	Laptop	LENOVO	82C5	Windows 10 Pro	SOQ\cynthia.yarran	PF2N03MJ	19/20
SOQ-LP12WX64	Laptop	LENOVO	82C5	Windows 10 Pro	SOQ\chambers	PF2MXDVL	19/20
SOQ-LP13WX64	Laptop	LENOVO	82C5	Windows 10 Pro	SOQ\tricia.brown	PF2MXDTZ	19/20
SOQ-LP14WX64	Laptop	LENOVO	82C5	Windows 10 Pro	SOQ\Chambers	PF2MZ2J3	19/20
SOQ-LP15WXI	Laptop	LENOVO	82C5	Windows 10 Pro	SOQ\jason.mashford	PF2MZFRN	19/20
SOQ-LP16WX64	Laptop	LENOVO	82C5	Windows 10 Pro	SOQ\wrf	PF2MZN0Y	19/20
SOQ-LP1WX64	Laptop	ASUS	X541UAK	Windows 10 Pro	AzureAD\Quairading-Managerof	H4N0CX15D55817D	19/20
SOQ-LP7WX64	Laptop	ASUS	ZenBook UX362FA_UX362FA	Windows 10 Pro	SOQ\Nicole.Gibbs	KCN0CV01200349B	19/20

Agent Name	Agent Type	Agent Manufacturer	Agent Mainboard	Windows Version	Agent User	Agent Serial Number	Purchased
SOQ-LP8WX64	Laptop	ASUS	ZenBook UX362FA_UX362FA	Windows 10 Pro	SOQ\cynthia.lowe	KCN0CV012020499	19/20
SOQ-LP17WX64	Laptop	ASUS	ZenBook UX363EA_UX363EA	Windows 10 Pro	SOQ\dean.mastin	LBN0CX13U131479	21/22
SOQ-LP18WXI	Laptop	LENOVO	82KB	Windows 11 Pro	SOQ\josh.thompson	PF39V8JX	21/22
SOQ-LP19WXI	Laptop	Acer	Extensa 215-54	Windows 11 Pro	SOQ\morganne.brunsdon	NXEGJSA0022110BE0C3400	21/22
SOQ-LP22WXI	Laptop	Dell	Inspiron 7506 2n1	Windows 11 Pro	CrHayes	5KMVMG3	21/22
SOQ-LP24WXI	Laptop	Dell	Inspiron 7506 2n1	Windows 11 Pro	SOQ-LP24WXI\crhippisle	9KMVMG3	21/22
SOQ-LP25WXI	Laptop	Dell	Inspiron 7506 2n1	Windows 11 Pro	SOQ\soqadmin	4KMVMG3	21/22
SOQ-LP26WXI	Laptop	Dell	Inspiron 7506 2n1	Windows 11 Pro	SOQ-LP26WXI\crstacey	3KMVMG3	21/22
SOQ-LP28WXI	Laptop	Dell	Inspiron 7506 2n1	Windows 11 Pro	SOQ-LP28WXI\crcowcill	4TXRMG3	21/22
SOQ-LP29WXI	Laptop	Dell	Inspiron 7506 2n1	Windows 11 Pro	CrCheang	6KMVMG3	21/22
SOQ-LP30WXI	Laptop	Dell	Inspiron 7506 2n1	Windows 11 Pro	SOQ-LP30WXI\crsmith	7KMVMG3	21/22
SOQ-LP31WXI	Laptop	Dell	Inspiron 7506 2n1	Windows 11 Pro	SOQ-LP31WXI\crhaythornthwaite	6LZRMG3	21/22
SOQ-LP27WX64	Laptop	Dynabook Inc.	TECRA A50-K	Windows 11 Pro	SOQ\natalie.ness	92136246H	22/23
SOQ-LP33WX	Laptop	Dynabook Inc.	TECRA A50-K	Windows 11 Pro	SOQ\chloe.nella	33079476H	22/23
SOQ-LP34WX	Laptop	Dynabook Inc.	TECRA A50-K	Windows 11 Pro	SOQ\marion.haeusler	33079738H	22/23
SOQ-WS32WX	WorkStation	EDsys Computers	EDAIOI5245	Windows 11 Pro	SOQ-WS32WX\Library	B349723	22/23

Agent Name	Agent Type	Agent Manufacturer	Agent Mainboard	Windows Version	Agent User	Agent Serial Number	Purchased
SOQ-LP4WX64	Laptop	LENOVO	81AX	Windows 10 Pro	SOQ\jen.green	R90QE1QS	17/18
MCQ-WS6WX64	WorkStation	Hewlett-Packard	HP ProDesk 600 G4 DM	Windows 10 Pro	quairadingmed\reception	8CC836154M	20/21
MCQ-WS5WX64	WorkStation	Hewlett-Packard	HP ProDesk 600 G3 DM	Windows 10 Pro	quairadingmed\gp	8CG8266YPD	20/21
MCQ-WS9WX64	WorkStation	EDsys Computers	EDWCI5W10P	Windows 10 Pro	quairadingmed\nurse	B346330	22/23
MCQ-WS7WX64	WorkStation	EDsys Computers	EDWCI5W10P	Windows 10 Pro	quairadingmed\pracmanager	B346328	22/23
MCQ-WS8WX64	WorkStation	EDsys Computers	EDWCI5W10P	Windows 10 Pro	quairadingmed\nurse	B346329	22/23

APPENDIX B: PRINTERS

Quairading Administration Office.

Printer Name	Make	Model	Serial No	Location	IP Address	Date Purchased
N/A	Canon	iR-ADV C7765	5C25653 I R	Administration Building	172.20.61.40	2017-18
N/A	Kyocera	Ecosys M4132idn	CN79M6507C	Depot	172.20.61.42	2022-23

Quairading Medical Clinic.

Printer Name	Make	Model	Serial No	Location	IP Address	Date Purchased
N/A	Canon	ImageCLASS MF4420n	HCX03633	Medical Practice	192.168.111.40	-
N/A	HP	M225dn	X9D2023092	Medical Practice	192.168.111.41	-
N/A	Epson	ET-M3180	KD22200394930	Medical Practice	USB	

APPENDIX C: MICROSOFT LICENSES

Quairading Administration Office.

Part No	Product Description	Qty Ordered	Coverage Period
	Office Standard 2016	8	N/A
	Server 2022 Standard 16 Core	2	N/A
	Server 2022 User CALs	32	N/A
	Server 2022 Remote Desktop Services – User CAL	29	N/A
	SQL Server 2019 Standard	1	NA
	SQL Server 2019 User CALs	29	NA
	WCS O365 Administrative Bundle	1	Annual
	Microsoft 365 Business Basics + EOA	7	Annual
	Microsoft 365 Business Premium	30	Annual
	Microsoft 365 Defender for Server	5	Annual

Quairading Medical Clinic

Part No	Product Description	Qty Ordered	Coverage Period
	WCS O365 Administrative Bundle	1	Annual
	Microsoft 365 Business Basics	4	Annual

APPENDIX D: ADDITIONAL LICENSES

Cost	2022/23	2023/24	2024/25	2025/26	2026/27
Annual licence fee (existing)	\$22,924	\$23,726*	\$24,557*	\$25,416*	\$26,306*
50% uplift	\$11,462	\$11,863*	\$12,278*	\$12,708*	\$13,153*
Altus Payroll licence fee	\$8,400	\$8,694*	\$8,998*	\$9,313*	\$9,639*
Altus Payroll implementation	\$49,883				
Module Implementation Costs (Smoothed)		\$32,233	\$32,233	\$32,233	\$32,233
Total investment	\$92,669	\$76,517	\$78,066	\$79,671	\$81,331

* Includes CPI estimate increase at 3.5% per annum

APPENDIX E: SUMMARY OF ESTIMATES

Quairading Administration Office/CRC/Depot.

Category	Description	Priority Number	Dependency Category	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
5.1	Backup & Disaster Recovery	1	5.1, 5.6, 5.7, 5.8	\$10,010	\$10,010	\$10,010
5.2	Domain	4		\$0	\$0	\$0
5.3	Anti-Virus	11		\$0	\$0	\$0
5.4	Corporate Applications	7		\$98,469	\$85,516	\$88,066
5.5	IT Support Arrangement	8		\$34,647	\$34,647	\$34,647
5.6	IT Disaster Recovery Plan	2	5.1	\$2,970	\$2,495	\$2,495
5.7	Internet Gateway	3	5.8	\$2,280	\$2,280	\$2,280
5.8	ISP Links	5	5.7	\$2,928	\$2,928	\$2,928
5.9	Uninterrupted Power Supply	13			\$395	\$1,250
5.10	Computer Room	16			\$3,000	
5.11	Local Area Network	12			\$1,500	
5.12	Desktop / Laptops	6		\$31,518	\$33,235	\$34,115
5.13	Servers	9	5.14	\$50,000		
5.14	Storage*	10	5.13			
5.15	IP Telephony	14		\$8,712	\$12,210	\$12,210
5.16	Printing	15		\$3,729	\$3,729	\$3,729
	COUNCIL CONNECT WEBSITE HOSTING					
	MINOR EQUIPMENT					
	TOTAL					

The Priority Number suggests the importance of the change. 1 represents a high priority i.e. now and 16 represents a low priority.

The Dependency Category shows a link between the categories. A link means other categories are required to complete the task.

* The costs associated with 5.14 Storage are incurred within the 5.13 Server item due to Server and Storage being the same hardware.

Quairading Medical Clinic.

Category	Description	Priority Number	Dependency Category	2022-2023 Costs	2023-2024 Costs	2024-2025 Costs
5.1	Backup & Disaster Recovery	3	5.1, 5.6, 5.7, 5.8	\$7,530	\$7,530	\$7,530
5.2	Domain	7		\$0	\$0	\$0
5.3	Anti-Virus	10		\$0	\$0	\$0
5.4	Corporate Applications	14		\$1,800	\$3,600	\$2,300
5.5	IT Support Arrangement	9		\$10,464	\$10,464	\$10,464
5.6	IT Disaster Recovery Plan	16	5.1		\$4,950	\$1,950
5.7	Internet Gateway	5	5.8	\$1,740	\$1,740	\$1,740
5.8	ISP Links	6	5.7	\$1,980	\$1,980	\$1,980
5.9	Uninterrupted Power Supply	12				\$4,140
5.10	Computer Room	4				
5.11	Local Area Network	11				
5.12	Desktop / Laptops	8		\$3,350	\$6,000	\$3,495
5.13	Servers	1	5.14	\$2,000		\$25,000
5.14	Storage*	2	5.13			
5.15	IP Telephony	13	COMBINED			
5.16	Printing	15			\$950	\$950
	TOTAL					

The Priority Number suggests the importance of the change. 1 represents a high priority i.e. now and 16 represents a low priority.

The Dependency Category shows a link between the categories. A link means other categories are required to complete the task.

* The costs associated with 5.14 Storage are incurred within the 5.13 Server item due to Server and Storage being the same hardware.

3DES

Triple DES is a mode of the DES encryption algorithm that encrypts data three times. Three 64-bit keys are used, instead of one, for an overall key length of 192 bits (the first encryption is encrypted with second key, and the resulting cipher text is again encrypted with a third key).

4G

4G is the fourth generation of wireless mobile telecommunications technology, succeeding 3G. Potential and current applications include amended mobile web access, IP telephony, gaming services, high-definition mobile TV, video conferencing, and 3D television

Active Directory

Active Directory (AD) is a directory service that Microsoft developed for Windows domain networks. It is included in most Windows Server operating systems as a set of processes and services. Initially, Active Directory was only in charge of centralized domain management. Starting with Windows Server 2008, however, Active Directory became an umbrella title for a broad range of directory-based identity-related services.

ADSL

(Asymmetric Digital Subscriber Line) is a technology for transmitting digital information at a high bandwidth on existing phone lines to homes and businesses. ADSL is an asynchronous service that delivers a faster download speed but slower upload speed.

AES

Advanced Encryption Standard (AES) is an encryption algorithm for securing sensitive but unclassified material by U.S. Government agencies and, as a likely consequence, may eventually become the de facto encryption standard for commercial transactions in the private sector.

BDSL

(Broadband or Business Digital Subscriber Line) is a technology for transmitting digital information at a high bandwidth on existing phone lines to homes and businesses. Unlike ADSL, BDSL is a synchronous service that delivers the same download and upload speeds.

CAL

A Client Access License (CAL) is a license granting access to certain Microsoft server software. CALs are used in conjunction with Microsoft Server software licenses to allow Users and Devices to access and utilise the services of that server software.

Cat5

ANSI/EIA (American National Standards Institute/Electronic Industries Association) Standard 568 is one of several standards that specify "categories" (the singular is commonly referred to as "CAT") of twisted pair cabling systems (wires, junctions, and connectors) in terms of the data rates that they can sustain. Cat5 supports data rates of 100 Mbps or 1000 Mbps (4 pair).

Cat6

ANSI/EIA (American National Standards Institute/Electronic Industries Association) Standard 568 is one of several standards that specify "categories" (the singular is commonly referred to as "CAT") of twisted pair cabling systems (wires, junctions, and connectors) in terms of the data rates that they can sustain. Cat6 supports data rates of 1000 Mbps (1Gbps) or 10000 Mbps (10Gbps).

Cloud Computing

A type of Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources which can be rapidly provisioned and released with minimal management effort.

CMS

A content management system (CMS) is a computer application that supports the creation and modification of digital content using a simple interface to abstract away low-level details unless required, usually supporting multiple users working in a collaborative environment.

CPU

A central processing unit (CPU) is the electronic circuitry within a computer that carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output (I/O) operations specified by the instructions.

CRM

Customer relationship management (CRM) is a term that refers to practices, strategies and technologies that companies use to manage and analyze customer interactions and data throughout the customer lifecycle, with the goal of improving business relationships with customers.

Deep Packet Inspection

Deep packet inspection (DPI) is a technology which allows a firewall device to classify passing traffic based on rules that not only include information about layer 3 and layer 4 contents of the packet, but also include information that describes the contents of the packet's payload – including the application data (for example, an FTP session, or a HTTP Web browser session, or even a middleware database connection).

DHCP

Dynamic Host Configuration Protocol (DHCP) is a communications protocol that lets network administrators manage centrally and automate the assignment of Internet Protocol (IP) addresses in an organisation's network.

DNS

The domain name system (DNS) is the way that Internet domain names are located and translated into Internet Protocol addresses.

Domain

A domain name is an identification string that defines a realm of administrative autonomy, authority, or control on the Internet. Domain names are formed by the rules and procedures of the Domain Name System (DNS). Domain names are used in various networking contexts and application-specific naming and addressing purposes.

Disaster Recovery

Disaster recovery (DR) involves a set of policies and procedures to enable the recovery or continuation of vital technology infrastructure and systems following a natural or human-induced disaster. Disaster recovery focuses on the IT or technology systems supporting critical business functions.

EDRMS

Electronic document and records management system (EDRMS) is a type of content management system and refers to the combined technologies of document management and records management systems as an integrated system.

EMC

EMC is a leading provider of IT storage hardware solutions to promote data backup and recovery and accelerate the journey to cloud computing.

ESXi

ESX Server is VMware's flagship enterprise server virtualization platform. It comes in two versions – ESX Server and ESXi Server where the latter has no service console and is the thinnest version available. ESX is an enterprise-level product developed by VMware Inc. that is used for server virtualization.

Ethernet

Ethernet is the most widely installed local area network LAN technology. An Ethernet LAN used to use coaxial cable but these days uses special grades of twisted pair wires.

Fibre

An optical fibre is a flexible, transparent fibre made by drawing glass (silica) or plastic to a diameter slightly thicker than that of a human hair. Optical fibres are used most often as a means to transmit light between the two ends of the fibre and find wide usage in fibre-optic communications, where they permit transmission over longer distances and at higher bandwidths (data rates) than wire cables.

Firewall

A firewall is a set of related programs, located at a network gateway that protects the resources of a private network from users from other networks. The term also implies the security policy that is used with the programs.

FSMO

FSMO is a specialized domain controller (DC) set of tasks, used where standard data transfer and update methods are inadequate. Active Directory (AD) normally relies on multiple peer DCs, each with a copy of the AD database, being synchronized by multi-master replication.

FTP

File Transfer Protocol (FTP) is a standard Internet protocol. It is arguably the simplest way to exchange files between computers on the Internet. It is also commonly used to download programs and other files to your computer from other servers.

GAS

Gateway anti-spyware (GAS) is a signature-based security solution that provides dynamic spyware protection at the perimeter of your network. The service blocks the installation of malicious spyware at the gateway and disrupts background communications from existing spyware programs that transmit confidential data.

GAV

Gateway anti-virus (GAV) is a signature-based security solution that provides protection at the perimeter of your network. They are your first line of defense, scanning inbound and outbound traffic to identify and block malicious threats before they can enter your network.

GIS

A geographic information system (**GIS**) is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface. **GIS** can show many different kinds of data on one map. This enables people to more easily see, analyze, and understand patterns and relationships.

Group Policy

Group Policy is a feature of the Microsoft Windows NT family of operating systems that controls the working environment of user accounts and computer accounts. Group Policy provides the centralized management and configuration of operating systems, applications, and users' settings in an Active Directory environment.

GWIP

Government Wideband Internet Protocol (GWIP) is a uniquely flexible, high-speed data networking solution that offers a simple cost-effective means of interconnecting offices throughout Australia.

HDD

A hard disk drive (HDD), hard disk, hard drive or fixed disk is a data storage device used for storing and retrieving digital information using one or more rigid rapidly rotating disks (platters) coated with magnetic material.

Hybrid cloud

A composition of two or more clouds (private, community or public) that remain distinct entities but are bound together, offering the benefits of multiple deployment models. Hybrid cloud can also mean the ability to connect collocation, managed and/or dedicated services with cloud resources.

ICT

Information and communications technology (ICT) is an extended term for information technology (IT) which stresses the role of unified communication and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information.

IP Address

An IP address is a 32-bit number that identifies each sender or receiver of information that is sent in packets across the network or Internet. The IP address has two parts: the identifier of a particular network on the Internet and an identifier of the particular device within that network. Due to the enormous growth of the Internet and the predicted depletion of available addresses, a new addressing system (IPv6), using 128 bits for the address, was developed in 1995.

IPS

Intrusion Prevention Service (IPS) is a pre-emptive approach to network security used to identify potential threats and respond to them swiftly. However, because an exploit may be carried out very quickly after the attacker gains access, intrusion prevention systems also have the ability to take immediate action, based on a set of rules established by the network administrator.

IPsec

A suite of protocols defining the security services developed by the Internet Engineering Task Force (IETF). IPsec is said to be especially useful for implementing virtual private networks and for remote user access through dial-up connection to private networks.

ISP

An ISP (Internet service provider) is a company that provides individuals and other companies' access to the Internet and other related services such as Web site building and virtual hosting. An ISP has the equipment and the telecommunication line access required to have a point-of-presence on the Internet for the geographic area served.

HA Pair

Some SonicWALL Firewall devices can be configured as a High-availability pair (HA Pair) which allows the primary and backup firewall devices to continuously synchronise so that the backup unit can seamlessly assume all network responsibilities should the primary unit fail.

HTTP

The Hypertext Transfer Protocol (HTTP) is the set of rules for exchanging files (text, graphic images, sound, video, and other multimedia files) on the World Wide Web. By default, HTTP operates on port 80.

LAN

A local area network (LAN) is a group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building).

Load Balancing

Load balancing allows the enabling of an interface as a secondary WAN port. The primary and secondary WAN ports are used in a more dynamic active/active setup, where the outbound traffic is divided to flow out between the primary WAN port and the secondary WAN port.

LRM

Limited Retirement Mode (LRM) is an announcement by Dell SonicWALL to indicate that it will no longer develop or release firmware updates or new features for these products. Software and firmware support for products in LRM is limited to critical bugs and security vulnerabilities.

LTO

Linear Tape-Open (LTO) is an open-format tape storage technology developed by Hewlett-Packard (HP), International Business Machines (IBM), and Certance. The term "open-format" means that users have access to multiple sources of storage media products that will be compatible. The high-capacity implementation of LTO technology is known as the LTO Ultrium format, or simply LTO Ultrium.

Malware

Malware (for "malicious software") is any program or file that is harmful to a computer user. Thus, malware includes computer viruses, worms, Trojans, and also spyware, programming that gathers information about a computer user without permission.

Mbps

Mbps stands for millions of bits per second or megabits per second and is a measure of bandwidth (the total information flow over a given time) on a telecommunications medium. Depending on the medium and the transmission method, bandwidth is also sometimes measured in the Kbps (thousands of bits or kilobits per second) range or the Gbps (billions of bits or gigabits per second) range.

MTO

The maximum tolerable outage is the amount of time the critical business functions may be without the support of IT systems and applications before business operations are severely impacted. The MTO encompasses all activities from point of impact to point of recovery.

NAS

Network-attached storage (NAS) is a file-level computer data storage server connected to a computer network providing data access to a heterogeneous group of clients. NAS is specialised for serving files either by its hardware, software, or configuration. It is often manufactured as a computer appliance – a purpose-built specialised computer.

NAT

Network Address Translation (NAT) is the translation of an Internet Protocol address IP Address used within one network to a different IP address known within another network. One network is designated the inside network and the other is the outside.

NBN

The National Broadband Network (NBN) is an Australian national wholesale-only, open-access data network. It is based on the premise that access to fixed line, wireless and satellite broadband connections are sold to retail service providers (RSPs), who then sell internet access and other services to consumers.

NSA

Dell SonicWALL Network Security Appliance (NSA) Series firewall's offer high-performance security against an array of attacks. The NSA Series combines Dell's patented Reassembly-Free Deep Packet Inspection (RFDPI) single-pass threat prevention engine with a powerful, scalable multi-core architecture.

NTFS

NT File System (sometimes New Technology File System) is the file system that the Windows NT operating system uses for storing and retrieving files on a hard disk. NTFS is the Windows NT equivalent of the Windows 95 file allocation table (FAT) and the OS/2 High Performance File System (HPFS).

On-premises

Software is installed and runs on computers on the premises (in the building) rather than at a remote facility such as a server farm or cloud. On-premises software is sometimes referred to as "shrinkwrap" software, and off-premises software is commonly called "software as a service".

PoE

Power over Ethernet (PoE) is the process of transmitting power to the target device at the end of an Ethernet cable by carrying power in the unused 4/5 and 7/8 wires. It enables access points and other remote devices to be installed where there is no power outlet.

Port

A port referred to in TCP/IP and UDP networks, is an endpoint to a logical connection. The port number identifies what type of port it is. For example, port 80 is used for HTTP traffic. Ports on a system can be left open for an incoming connection or closed to restrict unwanted access.

RAID

RAID (originally redundant array of inexpensive disks, now commonly array of independent disks) is a data storage virtualization technology that combines multiple physical disk drive components into a single logical unit for the purposes of data redundancy, performance improvement, or both.

RAM

Random-access memory (RAM) is a form of computer data storage. A random-access memory device allows data items to be read or written in almost the same amount of time irrespective of the physical location of data inside the memory

Ransomware

A computer malware that installs covertly on a victim's computer, executes a cryptovirology attack that adversely affects it, and demands a ransom payment to restore it. Simple ransomware may lock the system in a way which is not difficult for a knowledgeable person to reverse, and display a message requesting payment to unlock it.

RDP

Remote Desktop Protocol (RDP) is a proprietary protocol developed by Microsoft, which provides a user with a graphical interface to connect to another computer over a network connection.

Router

On the Internet, a router is a device or, in some cases, software in a computer, that determines the next network point to which a packet should be forwarded toward its destination. The router is connected to at least two networks and decides which way to send each information packet based on its current understanding of the state of the networks it is connected to.

RPO

The point in time to which systems and data must be recovered after an outage (e.g., end of the previous day's processing). RPOs are often used as the basis for the development of backup strategies.

RTO

The period of time within which systems, applications or functions must be recovered after a disaster declaration (e.g. one business day). RTOs are often used to determine whether or not to implement the recovery strategies/plan.

SAN

A storage area network (SAN) is a network which provides access to consolidated, block level data storage. SANs are primarily used to enhance storage devices so that the devices appear to the operating system as locally attached devices. A SAN typically has its own network of storage devices that are generally not accessible through the local area network (LAN) by other devices.

SAS

Serial Attached SCSI (SAS) is a point-to-point serial protocol that moves data to and from computer storage devices such as hard drives and tape drives. SAS replaces the older Parallel SCSI (Small Computer System Interface, usually pronounced "scuzzy") bus technology that first appeared in the mid-1980s.

SATA

Serial ATA (SATA, abbreviated from Serial AT Attachment) is a computer bus interface that connects host bus adapters to mass storage devices such as hard disk drives, optical drives, and solid-state drives. Serial ATA succeeded the older Parallel ATA (PATA) standard, offering several advantages over the older interface: reduced cable size and cost (seven conductors instead of 40 or 80), native hot swapping, faster data transfer through higher signalling rates, and more efficient transfer through an (optional) I/O queuing protocol.

SFF

A small form factor (SFF) is a computer form factor designed to minimize the volume of a desktop computer. In some cases, this term can be used to describe physical hard disks that are smaller than the standard 3.5" hard drives.

SIP

The Session Initiation Protocol (SIP) is a communications protocol for signaling and controlling multimedia communication sessions. The most common applications of SIP are in Internet telephony for voice and video calls, as well as instant messaging, over Internet Protocol (IP) networks.

SLA

A service-level agreement (SLA) is a part of a standardised service contract where a service is formally defined. Particular aspects of the service – scope, quality, responsibilities – are agreed between the service provider and the service user. A common feature of an SLA is a contracted delivery time (of the service or performance).

SMTP

Simple Mail Transfer Protocol is a protocol for sending e-mail messages between servers. Most e-mail systems that send mail over the Internet use SMTP to send messages from one server to another; the messages can then be retrieved with an e-mail client using either POP or IMAP. SMTP is usually implemented over Transmission Control Protocol port 25.

Snapshot

In [computer systems](#), a snapshot is the [state](#) of a system at a particular point in time. The term was coined as an analogy to that in [photography](#). It can refer to an [actual copy](#) of the state of a system or to a capability provided by certain systems.

SNMP

Simple Network Management Protocol (SNMP) is an "Internet-standard protocol for managing devices on IP networks. Devices that typically support SNMP include routers, switches and servers. It is used mostly in network management systems to monitor network-attached devices for conditions that warrant administrative attention.

SOE

Standard Operating Environment is a specification for a using a standard architecture and applications within an organisation. There is no industry-wide SOE standardisation, however organisations would usually deploy standard disks, operating systems, computer hardware (with the same configurations), and standard applications and software.

Spyware

Spyware is any technology that aids in gathering information about a person or organisation without their knowledge. On the Internet (where it is sometimes called a spybot or tracking software), spyware is

programming that is put in someone's computer to secretly gather information about the user and relay it to advertisers or other interested parties.

SQL

Structured Query Language (SQL) is a special-purpose programming language designed for managing data held in a relational database management system (RDBMS), or for stream processing in a relational data stream management system (RDSMS).

SSD

Like a memory stick, there are no moving parts to an Solid State Disk (SSD.) Rather, information is stored in microchips. Conversely, a hard disk drive uses a mechanical arm with a read/write head to move around and read information from the right location on a storage platter. This difference is what makes SSD so much faster.

SSO

Single sign-on (SSO) is a property of access control of multiple related, but independent software systems. With this property a user logs in with a single ID and password to gain access to a connected system or systems without using different usernames or passwords, or in some configurations seamlessly sign on at each system.

Stateful Inspection

Stateful packet inspection (SPI) is a firewall architecture that works at the network layer. Unlike static packet filtering, which examines a packet based on the information in its header, stateful inspection tracks each connection traversing all interfaces of the firewall and makes sure they are valid. A stateful inspection firewall also monitors the state of the connection and compiles the information in a state table.

Switch

In telecommunications, a switch is a network device that selects a path or circuit for sending a unit of data to its next destination. A switch may also include the function of the router, a device or program that can determine the route and specifically what adjacent network point the data should be sent to.

TIPT

Telstra Internet Protocol Telephony (TIPT) is a complete unified communications solution that's simple, flexible and scalable, and highly reliable. It allows you to converge voice, video and data on one network while providing a consistent user experience across devices and locations.

Trojan

A Trojan is a program in which malicious or harmful code is contained inside apparently harmless programming or data in such a way that it can get control and do its chosen form of damage, such as ruining the file allocation table on your hard disk.

UAT

In software development, user acceptance testing (UAT) - also called beta testing, application testing, and end user testing - is a phase of software development in which the software is tested in the "real world" by the intended audience.

UPS

An uninterruptible power supply (UPS) is a power supply that includes a battery to maintain power in the event of a power outage. Typically, a UPS keeps a computer running for several minutes after a power outage, gracefully shuts down the computer and powers it back on when the power is restored.

UTM

Unified threat management (UTM) is a solution in the network security industry, and since 2004 it has become established as a primary network gateway defense solution for organizations. In theory, UTM is the evolution of the traditional firewall into an all-inclusive security product able to perform multiple security functions within one single system: network firewalling, network intrusion prevention (IPS), gateway antivirus (AV), gateway anti-spam, VPN, content filtering, load balancing, data loss prevention, and on-appliance reporting.

VCM

VCM refers to a VMware vCentre Management server. A VMware vCenter Management server allows for the management of multiple ESX servers and virtual machines (VMs) from different ESX servers through a single console application.

Virtual Machine

A virtual machine (VM) is a software implementation of a machine (i.e. a computer) that executes programs like a physical machine. Virtual machines are separated into two major categories, based on their use and degree of correspondence to any real machine. Multiple OS environments can co-exist on the same computer, in strong isolation from each other.

VoIP

VoIP (voice over IP - that is, voice delivered using the Internet Protocol) is a term used in IP telephony for a set of facilities for managing the delivery of voice information using the Internet Protocol (IP). In general, this

means sending voice information in digital form in discrete packets rather than in the traditional circuit-committed protocols of the public switched telephone network (PSTN).

VPN

A VPN (virtual private network) is a way to use a public telecommunication infrastructure, such as the Internet, to provide remote offices or individual users with secure access to their organisation's network.

VSS

Volume Shadow Copy (VSS) is a technology included in Microsoft Windows that allows taking manual or automatic backup copies or snapshots of computer files or volumes, even when they are in use.

WAN

A wide area network (WAN) is a geographically dispersed telecommunications network. The term distinguishes a broader telecommunication structure from a local area network.

WAN Failover

WAN failover allows the enabling of an interface as a secondary or backup WAN port. The secondary WAN port can be used in a simple active/passive setup, where traffic is only routed through the secondary WAN port if the primary WAN port is down and/or unavailable.

Wi-Fi

A technology that allows electronic devices to connect to a wireless LAN (WLAN) network, mainly using the 2.4 gigahertz (12 cm) UHF and 5 gigahertz (6 cm) SHF ISM radio bands. A WLAN is usually password protected, but may be open, which allows any device within its range to access the resources of the WLAN network.

WSUS

Windows Server Update Services is a free add-on for managing patches and updates to the Microsoft Windows XP, Windows Server and Microsoft Office systems. Aimed mainly at small and medium-sized businesses WSUS is intermediate between the simpler Windows Update for individual computer users and the more robust Systems Management Server (SMS) for large enterprises.