
Do I really need to buy a new Server and is the cloud a viable alternative?

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Many businesses in New Zealand have been under pressure for some time to upgrade their servers, due to age and the pressures of growth, but have delayed due to nervousness about general market conditions. Typically a business will have at least a Small Business server which has been providing services like Exchange Email, File and Print resources, shared applications such as accounting packages and User and Computer management.

Now that the future is more certain for many businesses, these upgrade decisions can no longer be delayed – however there is a new pressure to consider Cloud computing as an alternative to upgrading or replacing server hardware. Business owners and CEOs alike are asking questions like, “Do I really need to have my own server?” and “Why can’t I run my business on Google?”.

Most articles written comparing cloud and on premise servers focus on the technical issues, and are written for specific point applications – developers managing in house applications, companies with web based applications run on their own web server etc. Alternatively they are describing very large scale solutions for enterprises with large applications and databases. However they miss the real questions a business owner needs to consider when faced with this choice in New Zealand today.

The challenge for a typically Kiwi CEO is made more difficult by the sales process adopted by most technology vendors. This usually has one of two stances – bamboozle you with science, or hide the complexity and make it sound so simple and cheap you can’t refuse it. Neither approach gives you the right information to make an informed choice between comparable alternatives.

The industry has changed in many ways and this sales approach is understandable. The key strands driving it are:

- Organisations are investing in large data centres with lots of server

capacity, and the technology to rent processing power to customers cheaply in one form of cloud computing or another. They push a sales story of reliability, easy scalability and simple monthly fees

- Software providers have made “Virtualisation” a reality for everyday business solutions. By this we mean that a Server or a Desktop computer can be simulated (virtualised) in a large shared platform, making support easier and scalability easier – but also changing the location of data and computers from your office / desk to a data centre, with a good network link in between. This offers a range of new opportunities including flexible choice of desktop computer (MAC, PC, Tablet) and makes remote working simpler.
- Networks have become faster and cheaper so that buying a highly reliable, high speed network is now within reach for most businesses. However international bandwidth is still hard to purchase cost effectively and reliability across internet connections is variable.

Risks and security concerns vary from one solution to another and ultimately the ability of your business to thrive depends on choosing not only the right technology but also the right business partner who will stand with you throughout the contract and ensure you receive the services you are paying for.

The IT industry is in a state of flux without doubt. Most of the smaller IT suppliers, dependant upon selling and setting up new hardware, will not

survive in their current state in the next 5 years, leaving many issues and problems behind as they fail and their customers potentially lose data, services and support in the process.

This paper then will review the key concepts behind the choice and understanding your requirements, then will present a framework to assist in making a good choice..

Why do I need a Server – key concepts

Firstly it is important to understand what the server does for you, and hence what are the choices you face as a business manager.

Servers provide a range of services to users, depending on the business and the purpose of the server. However there are roughly two types of server:

- General purpose business servers running a suite of services
- Dedicated application servers (including multi-tiered application and database servers in complex environments)

The typical general purpose server is a Microsoft Small Business Server, providing:

- Exchange email, giving office staff email, calendar and access to shared resources like meeting rooms, mobile email access etc
- Identity Management – determining which users can access each computer resources and under what circumstances – for example, Jim

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Smith can access the network on his own PC only, but Lisa Small can log on to anyone's PC and access the network resources. This also keeps a directory of everyone – the Active Directory.

- Domain Management – this defines the name of the domain, and maintains a list of names and addresses for everyone using the domain.
- Computer Management – maintaining updates on computers, and enabling users to log on to their profile from any desktop, authorising computers to access certain resources
- Printer Management – setting up and managing print queues for network printers centrally
- File shares – enabling users to share files (the “Z” drive)
- Line of business applications like MYOB, QuickBooks and other packages often run on this server as well.
- Network Management – including providing all other devices with their network address and enabling them to access the internet.

A dedicated Application server is normally accessed through a desktop computer that is authorised by the general purpose server – so most companies with Application servers will have general purpose servers as well.

Application Servers can be for advanced ERP systems like Greentree accounting, or SAP, or for document management systems and similar applications.

So why are servers important? They provide two critical functions in all this that nothing else does:

- Centralised access control, enabling you to provide or remove access to resources for users and computers in a single central location, that is then published to everywhere else on the network
- Management of shared resources – without a server to do this each shared resource needs to be set up on every computer that needs it individually.

A business therefore needs a server if they:

- Have enough users and computers that makes it difficult or expensive to manage each computer and user individually
- Have a need for shared applications for all staff to access

So the starting place for the framework must be – what do I need the server to do?

One of the most important roles of the server has traditionally been email – running MS Exchange. However with external hosters such as OneNet, Office 365 available from Microsoft as a cloud based service including email, file sharing and Lync collaboration; and Google Apps providing a similar suite, this is typically more economically run from the cloud for many businesses. Servers still however have a role in security and policy management and for some dedicated applications.

Thin Client, BYOD and Servers

The second question then is, if I do need a server, where should it be? Does it need to be in my offices or can I use a hosted server in a data centre – and why does it matter?

This actually deals with the big changes in desktop and devices which are becoming common in all businesses. As the desktop changes and mobile working increases, so the way the desktop and server work together and the network connections between them change.

There are 3 basic ways of running an application today – thick client, thin client and web application. These 3 methods have been around since before the change in the century, but only now are they coming of age and impacting the IT infrastructure decisions in smaller companies.

Thick Client applications

This is the traditional desktop environment in which applications run on your personal device. This device, typically a PC, needs to have the performance, disk space and memory needed to run all of the relevant

applications together. The data involved is stored either locally on the PC or on a server.

Examples of Thick Client applications are the standard Microsoft Office applications running on a PC, MAC or Laptop. The whole program and all its data is on the device – though files can be stored centrally on servers if required. Many accounting and ERP systems – MYOB, Quickbooks etc – traditionally operate like this, even though the database is stored on a server, the client application runs on every user's PC.

Thin Client Environments

Thin Client is the new trend, linked strongly to the BYOD – Bring Your Own Device – trend. A Thin Client environment is one in which all the work is done on the server and the client device only has to reflect the screen, keyboard and mouse. Any type of device – a PC, MAC, tablet or even a phone can be made to reflect the desktop PC which is running on the server, enabling staff to work on whatever device they choose, while the program runs on a Windows PC in the datacentre.

Applications typically don't need to change – the application actually runs on a virtual thick client desktop on the server, so most applications will run without any issues. The difference is that the data never leaves the server – so it is much more secure. Also the end user is using a terminal which only reflects screen changes and keyboard / mouse input – so can experience reasonable performance even when using a very slow network connection.

Thin client environments also offer the business the full benefit of server based management as the server still controls who has access to applications and data, and enforces security and policies. The benefit is the user can use any device from any location and still access the applications and information he or she is authorised to access, without actually taking that data and application off-site.

Web Applications

Web applications are now familiar to all of us – from simple applications like online banking and shopping carts, to

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CRM systems like Salesforce.com and online inventory management such as Unleashed, we all use online applications in some form in either personal or work lives.

For many companies a moving to Cloud based solutions actually means moving their applications from an inhouse server to a web application accessed across the internet. Xero is a great example of a "cloud based" accounting system that many small businesses are using.

Web based applications can be accessed from any internet browser typically, so offer similar benefits to Thin Client environments.

However every web application has a different means to allow access, set up printers etc, so each user needs to be provisioned separately on every web application they are to use. Support, application of policies and security measures are all much more complex in a web application world than in a thin client or thick client environment.

Virtualisation and the Cloud

At this point is worth pointing out the term "virtualisation" is actually not particularly helpful in designing the architecture as it has many meanings.

Virtualisation effectively means we make build a layer of abstraction between the application and the hardware it runs on. This makes the application much more portable – able to be moved from one hardware environment to another – without having to worry about drivers or specific hardware behaviour. This is very helpful from a support perspective, so most new servers nowadays are installed as virtual servers on the physical hardware even when a single server is being set up. This makes support easier and disaster recovery faster.

Desktop virtualisation is the same – except it is normally applied in environments where lots of desktop applications are run on the same server, so that one server can behave as if it is many end user's PCs. These end user PCs are then accessed through terminal services to create the Thin Client environment described above.

Server virtualisation is used extensively in data centres to provide high performance servers in a very robust environment. Customers rent server capacity by the month, and due to the nature of the technology they can be confident that the server will not fail for hardware reasons (Servers can still crash due to software problems of course).

Virtual Servers are not cheap options – there are definitely economies of scale, however a virtual server rented in a data centre is vastly more reliable and available than a single server in an office. The primary driver for virtual servers is not cost but resilience, security and reliability both of the hardware and also the network connectivity at the data centre.

Typical Target Solutions for a Mid-sized business

So to summarise this there are really 4 different solution architectures that any business might consider:

- Continuing to run their own server in house with traditional PC and laptops.
- Renting virtual servers in a data centre, and accessing them through either thick clients, thin clients or web based applications
- Renting thin client desktops and servers from a hosting company
- Running web based applications

In many cases some or all of these are combined together in the final choice.

Commercial Considerations in Cloud Based solutions

Apart from the technical differences between these solutions and the strengths and weaknesses in each, there are some obvious and some less obvious commercial issues to consider.

The obvious commercial issues are those of total cost of ownership. In a traditional server environment the total cost of ownership of the IT infrastructure is made up of:

- The capital cost of buying the server and its operating system licenses, amortised over 3-5 years, depending on the preferred refresh rate

- The capital cost of buying desktop PCs and their desktop licenses – Operating system, MS Office etc.
- Support – hardware repairs, on site troubleshooting and support, end user help desk
- Maintenance – applying operating system updates, application patches, upgrading memory or other hardware to meet increasing requirements over time.
- Network access, both on site, from home offices and over mobile devices
- Security – anti-virus licenses and maintenance and monitoring for infections, plus the cost of rectifying things when mistakes are made by staff and infections are let in.

All of these apply to a cloud based environment, with some differences:

- There is generally no capital cost – but there is a rental spread over the life of the contract for the facilities required. This is typically variable based on the performance needed.
- Thin Client desktops are licensed on a monthly rental basis with Microsoft – which works out cheaper than buying and upgrading the licenses every time a new version of Office comes out
- Desktop hardware is much cheaper for thin client environments.
- Maintenance costs are often bundled into the contract, as is security
- Network access is still an important consideration, but has different performance criteria

On top of this cloud computing environments have different commercial issues to consider such as:

- Security – whilst the hoster might claim to have great security, do they have the right procedures and policies to ensure their staff maintain this and that your confidential information is not exposed to their staff or subcontractors?
- Commercial risk – what happens if the hoster goes out of business, can you get your data back? What happens if you end up in dispute with the hoster, what can you do to

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prevent being at their mercy should they decide to turn off your service? Whilst you may have a contract that prevents this – what practically can you do if it happens?

- Support risk – how much traction will you have if things go wrong for you? Are you in a balanced relationship, rather than being a small company with no leverage over a multi-national hosting company, or a large enterprise at the mercy of a sole trader?
- Transparency – you have visibility of your own on-premise equipment, and if things go wrong you call in a different expert to resolve it – how will you manage this when everything sits in the “cloud”? How much will your hoster share with you – warts and all – when things go wrong?

Building a Decision Making Framework

As a small business owner or executive of a medium sized business without IT support on staff, making the decision to replace the server or go to the cloud is a challenging process. Finding people you can rely on to provide truly independent advice from your existing suppliers is difficult.

The following process is one we have used successfully to help to guide customers through this process, and involves 3 stages:

1. Understanding your requirements
2. Develop a cost model looking forward 3 years
3. Compare the options.

Whilst pointers are given to complete each stage, there are always additional questions to ask or issues to resolve based on the unique requirements of each customer, so this is provided as an outline approach not a foolproof method.

1. Understanding Your Requirements

Requirements come down to 3 aspects: Numbers (how much / how many), Functions (specific applications /

connections), Commercials (cost, availability, risk).

Numbers:

- How many staff are involved?
- How many sites (and where are they)?
- How many staff need to access systems and information when away from the office? What about customers / suppliers – do they need access to any of your information or systems?
- How many devices need to be supported (include mobile device quantity, type and what they are used for)?
- How much data is involved – size of your current shared file store, amount of data this increases by each year?

Functions:

- List all applications used, noting vendor, application name and version, database size, number of users and location of users
- List all important web applications used by staff in their daily work (some web applications won't perform well in a thin client environment for example).
- Identify how and what your staff need to access when out of the office – do you have access to customer sites? Some secure connections can only be made from fixed IP addresses – if you use one of these to access a customer or suppliers information then this needs to be noted when moving to a cloud supplier
- Develop a service matrix – list the services you and your staff require (file sharing, email, printing, Xero accounts etc) and identify how long you would be able to continue without that service if it failed. This will help to determine the priority you place on the reliability of systems and also the disaster recovery approach you need.

Commercials:

- Costs are looked at in the next section, however commercials covers more than just finance.

- Consider risk and security – what security do your customers require of the data you hold about them? Do you have specific privacy issues to be concerned about?
- What kind of partner are you looking for in a hosting company?
- Does your data need to remain in New Zealand for legal reasons?
- Do you require separate contracts for backup / recovery from the hosting company providing a service?

Developing a Cost Model

Cost models for decisions like this are complex and require a degree of intuition as well as pure numbers. The total cost of owning IT has to take into account not only the invoices spent, but also the frustration, lack of motivation and loss in staff productivity when things go wrong. However these costs don't appear in the accounts and are hard to take into account.

As a result we tend to develop an accounting cost based on financial information by:

- Reviewing your last 3 years accounts (ideally – or the longest period available easily) and identifying the total spend on IT. Included in this are the total hardware and software purchases, maintenance and support, internet and network charges. If the period does not cover the full 3 years, then allow for hardware replacement in the budget accordingly.
- Work this out on both a total and a per staff member basis. Factor in planned growth for the next 3 years and develop a budget for future spend as a baseline.
- Factor in the “soft costs” of lost productivity and so on by determining if you are prepared to spend more for better performance. Hence if there has been a lot of lost productivity due to issues, then investing in better quality IT and more resilient services to return better productivity may make sense.

Compare the Options

Get several quotes for both on premise server upgrades and cloud options. If

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you have a trusted IT partner, ask them for their recommendation as well but explain the need for a general review. Refer to your business network for recommendations of companies to ask to tender.

The tendering process need not be complex or onerous. Once you know what you need, getting pricing and solutions from vendors is not too difficult, and it should be possible to ensure you are comparing apples with apples in a reasonably transparent process.

Need External Assistance?

Many companies can work this out for themselves however there are several reasons for introducing an external party in the process:

- An independent review can assist in maintaining good relationships with existing vendors throughout the process
- External parties are likely to come up with good ideas for improvements without a vested interest in any one solution and may see technical solutions others could miss
- This process will take time – and the luxury of time is not always available. External advisors can make the process both quicker and more effective whilst keeping the hungry vendors off your back, enabling you to focus on more important revenue generating activity.
- An external party will have trusted partner vendors already that they can introduce you to, short-circuiting the research process in finding good potential partners to work with.

Conclusions

There is no one solution for all customers in the decision between in house server and cloud services. Most of our customers have gone for a blended approach involving both a dedicated server and hosted services.

Office 365, Google Apps and Xero have become standards in many businesses, changing the need for servers and the way we work. Virtual Desktop solutions – making it possible to work on a PC while using any device in any location – have made productive work possible from anywhere cost effective, and opened a host of new ways of working.

However servers still have a role in many businesses for performance, management and security roles.

Making the decision needs good information and a selection of well supported options, along with a good understanding of the risks involved and this framework should assist in understanding the questions to ask your vendors.

However it is true that a decision made is always better than no decision – holding off and delaying due to lack of understanding will result in compounding issues and problems and can cause major business disruption. External advice can be needed to move this process along, and even small business owners are increasingly recognising the need to bring in experts as and when required.



“Richard Cheeseman founded Lume to provide independent IT and telecommunications advice to businesses, offering part-time IT Managers and specialised helpful multi-vendor end user help desk services to typical Kiwi businesses. He is an experienced consultant with a track record in project and program management, solution sales and design and senior management in both the IT and Telecommunications industries. Known for his creativity in solving problems and tenacity in overcoming difficulties, Richard’s experience includes IT infrastructure projects, software development and implementation, strategic consulting and designing and implementing telecommunications (fixed and mobile) solutions.

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