

Student workbook

Unit code: BSBSMB412

Unit name: Introduce cloud computing into business operations

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**TAFE NSW would like to pay our respect and acknowledge Aboriginal and Torres Strait Islander Peoples as the Traditional Custodians of the Land, Rivers and Sea. We acknowledge and pay our respect to the Elders, both past and present of all Nations.**

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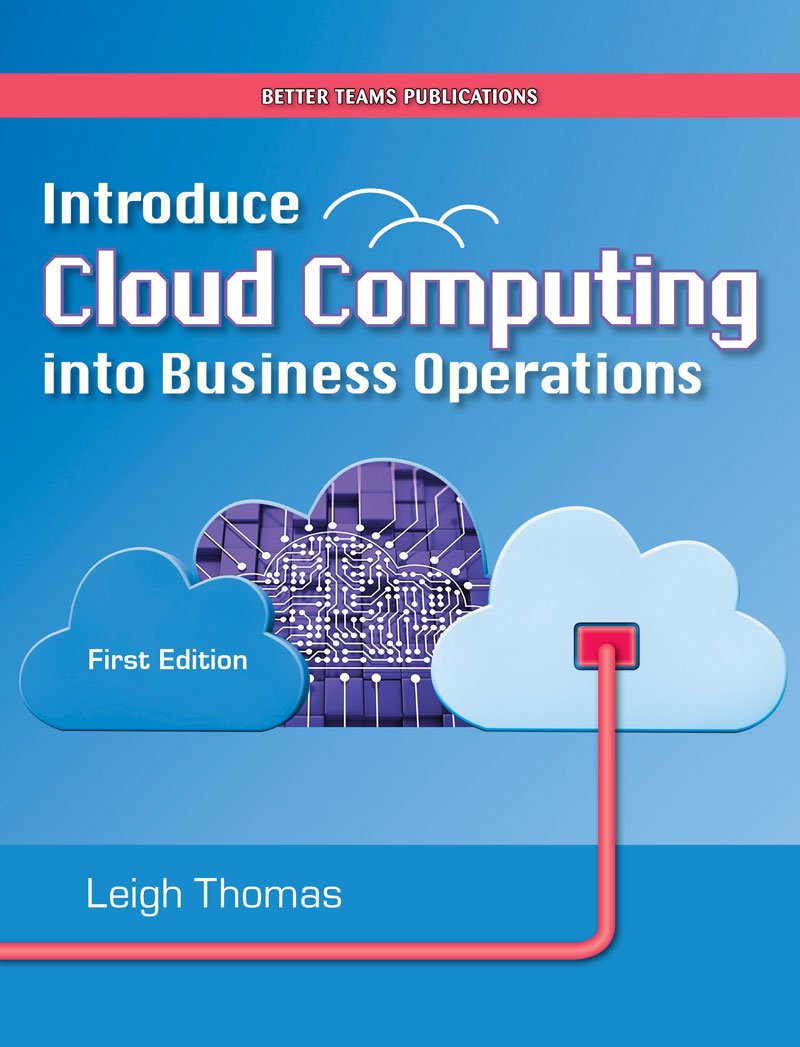
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This student workbook is designed for use by students undertaking the unit BSBSMB412 Introduce cloud computing into business operations, to assist them to develop the skills and knowledge required for successful completion of the assessments for this unit.

The following topics are included in this student workbook:

1. Review computing needs
2. Investigate cloud computing services
3. Develop a plan
4. Support implementation

The recommended textbook for this unit is Introduce Cloud Computing into Business Operations by Leigh Thomas, First Edition, ISBN: 978-1-925433-98-2



The student workbook is to be studied in conjunction with the recommended textbook.

Happy learning!

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|  | **Practice activity**  Learning activities are the tasks and exercises that assist you in gaining a clear understanding of the content in this workbook. It is important for you to undertake these activities, as they will enhance your learning.  Activities can be used to prepare you for assessments. Refer to the assessments before you commence so that you are aware which activities will assist you in completing your assessments. |
|  | **Collaboration**  Whether you discuss your learning in an online forum or in a face-to-face environment, discussions allow you to create and consolidate new meaningful knowledge. |
|  | **Self-check**  A self-check is an activity that allows you to assess your own learning progress. It is an opportunity to determine the levels of your learning and to identify areas for improvement. |
|  | **Readings (Required and suggested)**  The required reading is referred to throughout this Student workbook. You will need the required text for readings and activities.  The suggested reading is quoted in the Student workbook, however you do not need a copy of this text to complete the learning. The suggested reading provides supplementary information that may assist you in completing the unit. |
|  | **Assessment task**  At different stages throughout the workbook after you have completed the readings and activities you will be prompted to complete one or more of your assessment tasks. |
|  | **Video**  Links to videos will be give you a deeper insight into subject matter discussed in this workbook. If you use the student workbook in a digital format you will be able to click on the link to the video. If you are working from a printed version you will need to look these up using the URL provided. |

Topic 1

Review computing   
needs

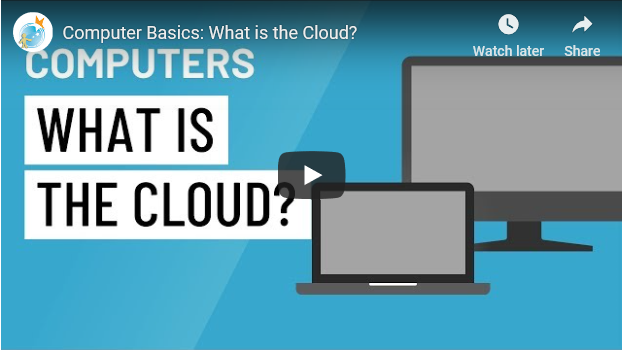
# Topic 1: Review computing needs

Let's start by having a quick look at what the cloud is and how cloud computing practices can be implemented or be beneficial to you

|  |  |
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|  | Watch |

## Computer basics: What is the cloud?

Watch [Computer Basics: What is the Cloud?](https://www.youtube.com/watch?v=gu4FYSFeWqg) video on YouTube. In this video, you will learn more about using the cloud. This video also includes information on reasons for using the web apps on the cloud.



Source: Standard YouTube licence [GCFLearnFree.org](http://gcflearnfree.org/) <https://www.youtube.com/watch?v=gu4FYSFeWqg>

## Review the computing needs of your business

Before introducing cloud computing into your business operations, you will need to review your current computing resources and their use and document your business requirements.

In an existing business, there will be various computer technologies in use. Each individual piece of technology usually provides something that is important to the business or its operations.

These are some essential questions to consider:

* What type of industry the business is in and what does the business do? (i.e. manufacturing, retailing, service industry, provider of professional services (accountant, lawyer, doctor) etc.
* What is the primary role of the business and what are its objectives? (e.g. maximise profits for shareholders, provide quality facilities and services to members (e.g. NFP entities).
* Is the business a new emerging business or a long-standing business with a strong brand and reputation?
* How dependent is the business on computing and information systems?
* What does the existing information and communications technology (ICT) landscape consist of?
* Will the current technologies be adequate for the future?
* What technologies do competitors have?
* Are there obvious weaknesses or problems with the existing ICT systems and services?

#### Review

Your review of the current computing resources may include:

* Determining business needs
* Identifying all tasks undertaken
* Identifying gaps in equipment and needs
* Listing all computer equipment
* Obtaining data on computer use
* Identify or flag which technologies are essential to continuity of business operations
* Stocktake/listing of current software and licences
* Amount involved in any ongoing software licenses and terms of the licences (what are the organisation’s contractual commitments regarding current licences i.e. what are the terms/penalties associated with cancelling/stopping usage).

#### Computing resources

The computing resources in use by the business may include:

* Hardware
* Peripherals
* Software and licences.

#### Computer usage

Computer usage by the business may include:

* Customer/ client relationship management (CRM) system
* Data storage and archiving
* E-commerce
* Email communication
* File management
* Remote access to data and services for mobile workers
* Accounting information systems
* Specialist data reports and analysis systems (sophisticated data analytics and ad-hoc reporting systems) for management and staff to assess performance in areas such as sales (i.e. sales reports), inventory management, and profitability (profit reporting).

#### Computing needs

The business's computing needs include:

* Accessing software to process information
* Accessing software to process transactions with customers and suppliers and maintain up-to-date financial records to meet statutory and legal requirements of businesses
* Accessing software to print reports
* Accessing organisational policies and procedures documents
* Accessing productivity tools (e.g. budgets, status and variance reports)
* Accessing reports to help maintain a sound system of internal controls in a business (including error reports and exception reports)
* Maintaining a client relationship management CRM system including client contact details, transactions with clients, status of client accounts and managing correspondence and continuous feedback with clients
* Data storage and archiving
* E-commerce—promoting the business using electronic media and social networking sites and links and enabling on-line transactions with customers (sales and service)
* Email communication—allowing communication between employees in an organisation as well as with employees and people outside the organisation (customers, suppliers, accountants and auditors, regulatory bodies e.g. ATO and ASIC)
* File management—safeguards restricting who has access and who can edit or alter data (ensuring security and restricted access to people both inside and outside the organisation)
* Shared access to data (i.e. networking of data and systems)
* Remote access to data and services for mobile workers and/or between branch locations.

Successful organisations are always evolving in one way or another. “They seek to improve their bottom-line, their competitiveness, their customer base, customer engagement, their production efficiency, or any number of aspects that senior management think is important for the future”[[1]](#footnote-1).

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| Readings icon | Reading list |

## Further research

To assist you in understanding and getting examples of cloud computing applications that could be implemented in your business, research information from the websites below. You will find examples of possible computing needs and potential improvements to business operations.

### Cloud computing examples

* [Does your business need a mobile accounting app?](https://www.xero.com/au/resources/small-business-guides/cloud-accounting/mobile-accounting-app/)
* [Five real-world examples of cloud computing](https://www.maropost.com/blog/5-real-world-examples-of-cloud-computing/)
* [Top ten cloud computing examples and uses](https://www.newgenapps.com/blog/top-10-cloud-computing-examples-and-uses" \t "_blank)
* [Cloud accounting is revolutionising how accountants work](https://www2.deloitte.com/au/en/pages/deloitte-private/articles/deloitte-private-cloud-accounting.html)

### Health care case study

This [article](https://www.theguardian.com/media-network/media-network-blog/2013/sep/24/cloud-computing-changing-world-healthcare) shows an example of how moving clinical records to the cloud provides healthcare professionals with mobile access to information:

## Summarising business computing needs and collating the information

All of the following components can be provided to a business via the ‘cloud’ across the internet:

* General file server storage.
* Backups.
* Platforms (hardware and software) for websites and databases.
* Business software applications—from large integrated enterprise systems down to small point-solutions.
* Email and related applications.

The task of continually upgrading software versions becomes the responsibility of the cloud service provider.

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## Activity 1.1: Multiple choice

Check the boxes below for the correct answer/s.

**1. When something is stored in the cloud it means:**

it is stored in external internet servers

it is stored on your computer

it is stored on a USB

it is stored on your smart phone

**2. Select from the components below the ones that can be provided to a business via the 'cloud'.**

Backups

Platforms (hardware and software) for website and databases

Business applications

Email and related applications

All of the above

**3. When reviewing computing needs in business you should determine current business needs, identify tasks that are undertaken, list all the equipment, obtain data on computer use and stocktake all software and licences. True or False?**

True

False

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## Activity 1.2: Cloud computing applications and software

To assist you with your understanding of two of the main types of cloud computing providers for small business, please research [MYOB](https://www.myob.com/au/blog/cloud-accounting-explained/) and [Xero](https://www.xero.com/au/why-xero/benefits/online-accounting/)

Prepare a short written summary (no longer than a page) describing the features and benefits of cloud based software.

Topic 2

Investigate cloud  
computing

services

# Topic 2: Investigate cloud computing services

## Research fundamentals of cloud computing

This topic will give you a deeper understanding of what the cloud is, the types of services offered and their costs.

Cloud refers to a provision of scalable and measurable IT resources. The link to [CLOUD](https://patterns.arcitura.com/cloud-computing-patterns/basics/basic-concepts-and-terminology/cloud) further explains this.

### Cloud computing

* Is so-called because it appears its services are ‘in the cloud’ (accessed over the internet). In reality, the services are running on real hardware and software, managed by staff and at some location owned by the cloud service provider.
* Involves accessing computer resources from a remote location rather than from those located at the user’s site.
* Enables a business to rent computing software and/ or infrastructure owned and located at the premises of an external service provider. This is instead of purchasing, owning and managing those resources on their own premises.

Simply, cloud computing is a model for allowing convenient, on demand access from anywhere, to a shared pool of computing resources.

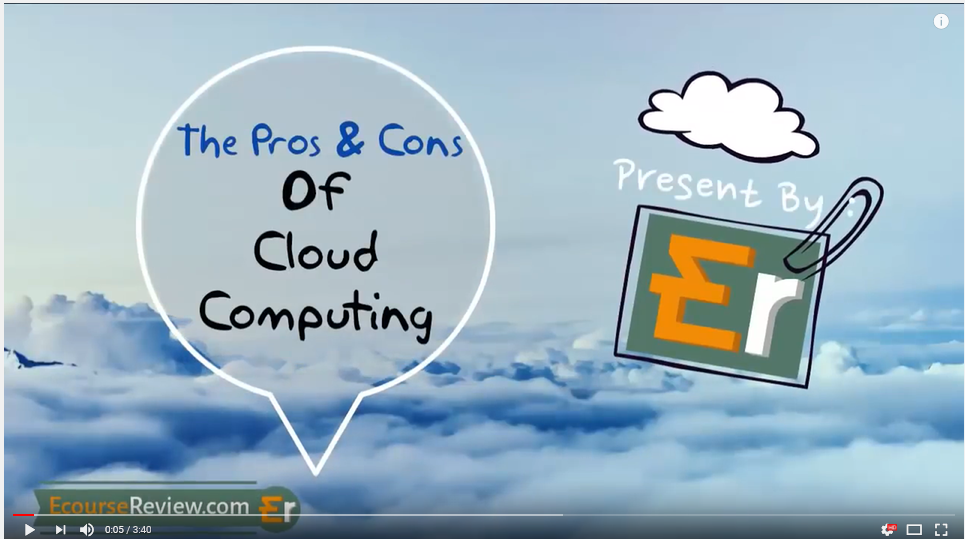
### Fundamentals

The fundamentals of cloud computing may include:

* **Basics of virtualisation** - ability for an icon or link to make the software appear to be located on the business’s computers when it is in fact located on an external server on the web.
* **Benefits of cloud computing** i.e. it allows businesses to avoid or minimise the fixed, IT infrastructure costs (related to hardware and software purchases). Third-party clouds enable businesses to focus on their core business operations and spend less time running, managing and updating their IT systems.
* **Flexibility** - ability to choose optional levels of functionality and switch to a new package at minimal cost.
* **Scalability** - only paying for the services your business needs as opposed to having to purchase an entire software package.
* **Due to costs being shared by multiple users**—there is the ability to be highly responsive to emerging trends. Hence it is likely bugs are rectified quickly and the software is regularly updated and improved.
* **Opportunities** to rent software that may have been unaffordable to purchase.
* **Technical support** – the need for fewer internal staff with specific information technologies skills and qualifications. A large number of technical issues and problems can be referred to the cloud service provider. Businesses expect prompt responses and often depending on the type of business 24/7 service. A separate fee is often charged by cloud providers to provide technical support services.
* **Risks** - practical aspects associated with:
  + The need to have good internet coverage to be able to operate systems and access your business data and records.
  + Costs associated with uploading and downloading data that your internet service provider charges.
  + Security and privacy breaches with potential unauthorised access to customer and business data.
  + Survival risks of the host company—i.e. if they cease to have a viable business does that mean you lose access to the software, hardware and past data? How would that impact your ability to keep trading?
  + Lack of visibility and control over the systems being used to record and store data. Unable to see breaches or security threats. A lot of trust is being placed in the host business protecting your information and that of your customers/clients and reporting hacks and system security breaches to you.

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|  | Watch |

Watch the video [On Premise VS Cloud Computing - Pros and Cons Comparison](https://www.youtube.com/watch?v=KVydGQGR1Lo) on YouTube (Duration: 3:40 minutes). It explains the three delivery models of cloud computing.



https://www.youtube.com/watch?v=KVydGQGR1Lo | Video source: Standard YouTube licence - Ecourse review

### Types of clouds (public, private and hybrid clouds)

**Public clouds.** In a public cloud—software and cloud storage of data is made available by an external service provider or a range of providers for use in a range of businesses willing to subscribe to use the services.

**Private clouds.** A private cloud is a cloud set-up by an organisation for the exclusive use of the organisation only. As a result, the organisation’s IT department or external IT consultants are fully responsible for: the set-up of the cloud; purchasing the necessary hardware and software; maintaining the equipment and systems; maintaining the website; updating the systems as necessary; securing the site; and safely storing the data. While a private cloud provides networking and offsite access to data by organisation members - many of the cost benefits associated with cloud computing are lost. This is often not a good option for small businesses with limited funds and IT knowledge and skills.

**Hybrid clouds.** Hybrid clouds applies to organisations that use a combination of public and private cloud services. For example, a union may keep their membership records on a private cloud using an information system—i.e. hardware and software they have purchased but they may use MYOB or Xero cloud accounting software to record and store their accounting records.

## Types of services and costs

Cloud computing service types may include:

* Infrastructure as a service (laaS) - Provides users access to raw computing resources such processing power, data storage capacity, and networking, in the context of a secure data centre.
* Platform as a service (PaaS) - Geared toward software development teams, provide computing and storage infrastructure and also a development platform layer, with components such as web servers, database management systems, and software development kits for various programming languages.
* Software as a service (SaaS) - Offer application-level services tailored to a wide variety of business needs, such as customer relationship management (CRM), marketing automation, or business analytics. Examples: Gmail, Google Docs and Google Drive.
* Storage as a service (STaaS).
* Security as a service (SECaaS).
* Data as a service (DaaS).
* Test environment as a service (TeaaS).
* Desktop as a service (DaaS).
* Application programming interfaces (API) as a service (APlaaS).

The term 'as a service' has been coined to describe the provision of various cloud services over the internet, several types of processes can be rented...as a service.

|  |  |
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| E:\TAFE Digital\Projects\Accessibility Project - 03.04.2018\Template - SkillsPoint\Template - Icons\Reading LAVENDER.png | Suggested reading |

Thomas, L, 2018, *Introduce Cloud Computing into Business Operations*, Better Teams Publications, Strawberry Hills, Australia.

Read pages 71 to 76 of the recommended textbook for more information about each of these separate cloud services.

|  |  |
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|  | Watch |

Watch the video [Cloud Computing Services Models (laaS, PaaS and SaaS explained)](https://www.youtube.com/watch?v=36zducUX16w) on YouTube (Duration: 6:42 minutes). It explains the three delivery models of cloud computing.



<https://www.youtube.com/watch?v=36zducUX16w> | Video source: Standard YouTube licence - Ecourse review

|  |  |
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|  | Watch |

Watch the video [Forms of Cloud services and types of cloud service](https://www.youtube.com/watch?v=uroryFU78gM&feature=youtu.be) on YouTube published by SUSE published on Dec 17, 2015 (Duration: 5:50 minutes).  
https://www.youtube.com/watch?v=uroryFU78gM&feature=youtu.be Video source: Standard YouTube licence - Suse

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| Practice activity icon | Practice activity |

## Activity 2.1: Cloud service

Identify what type of cloud services each of the providers below provides to business.

|  |  |
| --- | --- |
| **Cloud provider** | **Type of cloud services supplied to businesses.**  **(List any useful research Weblink references for use in the Business Case Proposal to assist you with your preparation for Assessment Event 2)** |
| Google Cloud |  |
| Microsoft Azure |  |
| Amazon Web Services |  |
| Adobe |  |
| IBM Cloud |  |
| Rackspace Cloud |  |
| Xero |  |
| Reckon |  |
| MYOB |  |

**Note:** No solution is supplied to this activity—it is your own introductory research that will be useful later when completing the research required for assessment event 2.

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| Readings icon | Reading list |

### Cost and prices

It is important to do some research into how much cloud computing will cost. Depending what type of service you are after, the following article may assist. [Best cloud storage of 2019 compared](https://www.techradar.com/au/news/the-best-cloud-storage).

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## Activity 2.2 – Cloud computing price comparison

Research the pricing for two of the major cloud based software options for small businesses in Australia, using the below links.

* [Xero accounting software prices](https://www.xero.com/au/try/accounting-software/?gclid=EAIaIQobChMIkdOepean2wIVj4qPCh3X3gVxEAAYASAAEgL1lPD_BwE&gclsrc=aw.ds&dclid=CPm3pKjmp9sCFQ99vQode1gAEg)
* [MYOB accounting software prices](https://www.myob.com/au/accounting-software/essentials)

Prepare a price comparison over a 12 month period to check what the price differences are between standard Xero and MYOB cloud based options.

## Do I need to seek assistance from specialists?

By now, you will realise how important it is for business owners, leaders and employees to understand their cloud computing options, their applications and use in the workplace.

It is recommended to consult or seek assistance from specialist advisors to determine relevant cloud computing services. You can do this by visiting the major cloud service providers’ websites and reviewing their services offered.

## Terminology

### Vertical cloud

A vertical cloud is a type cloud computing solution or service designed for a specific industry or business sector (vertical) or designed for specific application use. Providers tailor vertical cloud offerings to specific industries e.g. construction, health, finance, retail, education etc rather than having one general, all-purpose cloud offering or software solution that is applicable over a range of different industries.

For example, a vertical cloud product intended for the health care industry may have tools specially designed to share a patient’s health records with a range of medical practitioners (provided the patient consents); or it may allow a doctor to view a patient’s medical imaging files online. Although these applications are very functional and useful businesses in the health care industry, they are not be helpful at all in other industries without further vertical design to tailor them to the requirements and specific legislative restrictions etc that may apply to other industries.

### On-demand service

On-demand services, in the context of IT, is a feature of cloud computing services, which allow users to utilise cloud resources when and where needed and pay accordingly for the level of services they use.

On-demand service allows end users to use cloud computing, storage, software and other resources instantly and in many cases without limits. This provides flexibility in scaling these resources up and down according to business needs and dynamics. This is what makes on-demand services so valuable. Companies can access additional resources quickly and easily when they need them and then scale back to previous levels when those resources are no longer required.

### Virtual private data centres (VPDCs)

A virtual private data centre (VPDC) is a type of cloud service model in which a private cloud vendor provides the entire infrastructure over the cloud. VPDCs are generally cloud offerings, with a full suite of enterprise-level IT resources bundled together and provided over the internet to clients within a private cloud model. A complete VPDC solution can contain processing, storage, infrastructure, and application and data centre management software.

A virtual private data centre can be thought of as the amalgamation of almost all the different cloud services available and provided as a single solution to an individual business. A VPDC helps an organisation avoid the massive capital operational costs incurred with the set-up and maintenance of an in-house data centre, while maintaining privacy and control over their cloud data centre through private service level agreements. Generally, this includes the segregation of their rented data centre resources from other clients.[[2]](#footnote-2)

### Multitenancy

Multitenancy is a type of computing architecture in which one or more logical software instances are created and executed on top of primary software. Multitenancy allows multiple users to work in a software environment at the same time, each with their own separate user interface, resources and services.

Multitenancy is the backbone influencing the evolution of cloud computing. It works when the same software is accessed by several users simultaneously connected over the Internet. Typically, such software is hosted, provisioned and managed by a cloud provider. Each user, or tenant, can customise the software’s preferences and settings. However, all of these settings are provided within the same software instance without providing access to its source code.

SaaS-based software applications delivered over the internet are a common example of multitenancy where a single application is accessed by many different users globally.[[3]](#footnote-3)

### Software plus service

Software plus Services (S+S) is a Microsoft initiative to provide traditional software with a suite of cloud hosted services integrated to provide enterprise-level solutions. Software plus services is a vision to create a pool of services and solutions that spread across virtually every possible personal or business computing requirement.

Microsoft established software and storage facilities that transfer traditional in-house server, storage and other infrastructure solutions to the cloud. These software programs and storage options are accessible and operable on multiple devices (computers, phones and tablets). These solutions and services are primarily delivered on cloud by Microsoft and its partners and provides all different cloud models from SaaS, PaaS, IaaS and hybrid solutions. Examples include: Office 365, Windows Azure, Dynamics and Intune. They can be made available on both a subscription-based pricing model and the traditional licensing model.[[4]](#footnote-4)

### Hosted application

A hosted application is a software as a service (SaaS) solution that allows users to execute and operate a software application entirely from the cloud on a recurring subscription. Hosted applications are hosted and powered from the remote cloud infrastructure and are accessed globally through the internet. They provide the same functionality as locally installed software but can be updated more easily.

Hosted applications may also be known as internet-based applications, web applications and online applications. Hosted applications require no upfront installation and have minimal integration requirements. Hosted applications are managed by the service provider and are routinely updated and patched with the most stable version and are backed by continual technical and customer support. Although most hosted application offerings don't require a client-end installation, some require a thin client application to be installed at a local workstation for accessing the remote application.[[5]](#footnote-5)

### Consumption based pricing model

A consumption-based pricing model relies on the fundamental philosophy that customers pay according to the amounts of services that they use or consume. This is one of several prominent pricing models in cloud computing services. Vendor businesses will charge customers according to their use.

As a main pricing model, consumption-based pricing competes with something called subscription-based pricing. A subscription-based pricing model means that customers simply sign up for Web-delivered services on a daily, monthly or annual basis. Here, customers are not charged per use, but per unit of time as designated by their subscription to services. In other words, within the time frame of their subscription, customers enjoy infinite service use for a flat rate.[[6]](#footnote-6)

### Cloud-sourcing

Cloud-sourcing is a process by which specialised cloud products and services and their deployment and maintenance is outsourced to and provided by one or more cloud service providers.

Cloud-sourcing enables organisations to procure their entire IT infrastructure from a cloud, easily integrate them with any platform and requires no management overhead. Cloud-sourcing is believed to be the future of cloud computing and business, where organisations of all sizes are rapidly looking to the cloud to meet their IT needs.

Cloud-sourcing is a similar trend to outsourcing where an organisation outsources some or all of its business processes to a third-party vendor, except that in outsourcing, the company deploys hosts to provide a complete IT solution onto a public or private cloud data centre.

Cloud-sourcing services are typically vertical, (cloud-in-a-box solutions) that are designed to fulfil a specific business segment's IT need.[[7]](#footnote-7) . It breaks many of the previous barriers in terms of cost and software that was only accessible or operable on certain platforms and devices.

### Elastic computing (EC)

Elastic computing is a concept in cloud computing in which computing resources can be scaled up and down easily by the cloud service provider. Elastic computing is the ability of a cloud service provider to provision flexible computing power when and wherever required. The elasticity of these resources can be in terms of processing power, storage, bandwidth etc. They can be easily scaled up or down without disrupting the operations and this ability is known as elastic computing.

Cloud computing is about provisioning on-demand computing resources with the simplicity of a mouse click. The amount of resources which can be sourced through cloud computing incorporates almost all the facets of computing from raw processing power to the supply of large amount of storage space.[[8]](#footnote-8)

An awareness of the variety of forms cloud computing can take and the various options or levels available as demonstrated by the various terminology is necessary when doing a cost/benefit analysis and developing a plan to introduce cloud computing.

|  |  |
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| Practice activity icon | Practice activity |

## Activity 2.3: Check your knowledge

Check the boxes below for the correct answer/s.

**1. Elastic computing is a term that refers to ability of a customer to purchase cloud services as needed and then return them. True or False?**

True

False

**2. Select three fundamental components of cloud computing from the list below.**

basics of virtualisation

no scalability

security and privacy

lack of flexibility

public, private and hybrid clouds

**3. Cloud computing provides several types of processes over the internet. The anagram aaS refers to?**

at another System

as a Service

above a Station

allow a System

## Conducting a cost benefit analysis for introducing cloud computing

A cost benefit analysis (CBA) includes a range of quantifiable costings, qualified with a range of non-monetary, strategic benefits.

The cost benefit analysis supports a business case, which is primarily a business document, rather than a technical or financial one.

#### Costs

There are three layers of costs associated with cloud computing cost-benefit analysis:

* Base costs, principally about infrastructure: existing hardware costs, staff costs, data communication/transmission costs, workspace costs, electrical power costs.
* Data and software application costs: software costs, data storage costs, transaction volumes, computational power, user demand.
* Project costs of the transition.

These can be further broken down into non-recurring costs and recurring costs.

Once all the above factors have been researched and considered, the cost analysis can be translated into a dollar figure. It can include a few predictive figures for aspects that cannot accurately be estimated.

#### Benefits

The ‘B’ part of the cost-benefit analysis (CBA) is not only about monetary costings, It is also about intangibles; things that are hard to quantify but are nonetheless critical success factors for the business. Although these are non-monetary they are typically highlighted in a business case.

Cloud computing is becoming more common in businesses as it can offer many benefits such as improvements in staff efficiency, employee collaboration and data storage solutions.

The following articles provide benefits of cloud computing:

Research [Ten benefits of cloud computing](https://www.salesforce.com/uk/blog/2015/11/why-move-to-the-cloud-10-benefits-of-cloud-computing.html)

#### Google drive

The following links provide you with information about the [Top 10 benefits of Google drive](http://www.art-systems.net/blog/10-benefits-of-google-drive/?lang=en), and how to access and [how to use Google drive](https://www.google.com.au/intl/en-GB/drive/using-drive/).

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| E:\TAFE Digital\Projects\Accessibility Project - 03.04.2018\Template - SkillsPoint\Template - Icons\Reading LAVENDER.png | Suggested reading |

Thomas, L, 2018, *Introduce Cloud Computing into Business Operations*, Better Teams Publications, Strawberry Hills, Australia. Pages 77 - 80.

## Identify potential opportunities and risks

Look at how to identify potential opportunities and risks associated with introducing cloud computing into a business by reading through the four sections below:

### Opportunities

Read pages 77 to 78 of the recommended text in relation to:

* Rapid set up
* Flexible and prompt scaling
* Cost management
* Disaster recovery.

### Risks

Read page 78 of the recommended text in relation to:

* Connectivity issues
* Survival of individual cloud computing providers
* Technical evolution.

### Security and privacy

Read page 79 of the recommended text.

Amongst the greatest concerns about using cloud computing are legitimate questions surrounding security and privacy. Many of these do not yet have perfect answers:

* Malicious threats
* Data confidentiality
* Physical security
* Legal seizure.

### Technical

Read page 80 of the recommended text in relation to other issues to consider:

* Access to technical support
* Utilise PCs or browser-only strategy.

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| Readings icon | Reading list |

## Further research

The information in the sections below will help you understand what you need to consider when identifying the risks and benefits of cloud computing for your business.

### Risks and benefits

The following links discuss potential opportunities and risks associated with introducing cloud computing:

* [Five challenges to cloud computing success](https://www.intheblack.com/articles/2017/10/06/challenges-cloud-computer). This article written by Dr Michael Axelsen FCPA (a lecturer in Business Information Systems UQ Business School, University of Queensland) and published in CPA Australia’s In the Black magazine provides a lot of warnings and considerations about choosing the right cloud provider. It gives a great summary of security and privacy considerations: including the legislative requirements about maintaining privacy and managing personal or sensitive information and responsibilities regarding the mandatory reporting of security breaches of such information.
* [Potential opportunities and risks](https://www.digitalistmag.com/technologies/cloud-computing/2012/10/25/risks-and-benefits-of-cloud-computing-020025)
* [Risks and benefits of moving to the cloud](https://www.afr.com/news/special-reports/cyber-threat/balancing-the-benefits-and-risks-of-cloud-computing-20171214-h04e46)

### Other considerations

The following links discuss other considerations.

* [Top ten considerations before implementing cloud computing](https://searchitchannel.techtarget.com/feature/Top-10-considerations-when-implementing-Software-as-a-Service)

### Privacy considerations

Read through this important document in relation to [privacy responsibilities and considerations](https://www.oaic.gov.au/privacy-law/privacy-archive/privacy-speeches-archive/privacy-and-the-cloud) to assist you with your understanding of the privacy issues surrounding the use of cloud computing.

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| Practice activity icon | Practice activity |

## Activity 2.4: Cloud computing risks and opportunities

Consider any one cloud computing application or software. Provide a short response (1-2 sentences) to each of the following:

1. **A reason not to implement in your business.**
2. **A reason to implement in your business.**
3. **A risk associated with implementation**
4. **An opportunity associated with implementation.**
5. **An explanation as to whether or not you would implement the application.**

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Thomas, L, 2018, *Introduce Cloud Computing into Business Operations*, Better Teams Publications, Strawberry Hills, Australia.

Thoroughly read pages 85 to 90 of the recommended textbook to gain an understanding of Cost-Benefit analysis.

### Cost benefit analysis

To further your understanding of cost-benefit analysis, research the article [Cost-benefit analysis – Deciding, quantitatively whether to go ahead.](https://www.mindtools.com/pages/article/newTED_08.htm)

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## Activity 2.5: Cost Benefit Analysis

Access the following link to research the topic “[how is cloud computing cost effective](http://www.cetrom.net/uncategorized/how-is-cloud-computing-cost-effective)” and prepare a list of the benefits of cloud computing.

## Prepare a business case

### Prepare to write a business case for implementing cloud computing services.

A business case is a carefully structured document which pulls together all the reasoning for making a change from current arrangements.

It is principally a business document not a financial one, although the financial implications of new costs and possible savings to offset them need to be included.

The business case aims to explain what is being proposed, and why. It must do this in business terms, not technical ones. If it provides some benefits to the competitive position, agility or flexibility, capability to meet growing or different customer demands, or the ability to interact with suppliers or regulatory authorities in more efficient ways, it will get the attention of the senior decision-makers.[[9]](#footnote-9)

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Thomas, L, 2018, *Introduce Cloud Computing into Business Operations*, Better Teams Publications, Strawberry Hills, Australia.

Thoroughly read pages 91 to 92 of the recommended textbook to gain an understanding of how to prepare a business case.

### Sections of a business case

There is no perfect template for writing a business case, but it usually contains the following components:

* Executive summary
* Introduction
* Statement of the problem or new technology being considered (e.g. “Proposed transfer of systems and data to the cloud”)
* Analysis—specific of what this entails
* Discussion of possible options:
  + benefits
  + costs
  + time scale
  + risks
  + opportunities
* Recommendation
* Details of your chosen option
* Conclusion.

|  |  |
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| Readings icon | Reading list |

## Research

The information below will assist you in understanding how to write a business case.

### How to prepare a business case

The following links will assist you to write a business case:

* [How to prepare a business case](https://www.skillsyouneed.com/write/business-case.html)
* [How to build a business case](https://www.zdnet.com/article/cloud-computing-how-to-build-a-business-case/)

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| Practice activity icon | Practice activity |

## **Activity 2.6: Review computing needs for businesses**

Complete the following table, showing the common computer equipment and critical information systems required for the type of business shown.

| **Type of Business entity** | **Common computer equipment** | **Critical information systems** |
| --- | --- | --- |
| a medical centre |  |  |
| a law firm |  |  |
| a building firm |  |  |
| an insurance company |  |  |
| a retail business |  |  |

Topic 3

Develop a plan

# Topic 3: Develop a plan

## Systems development life cycle

The systems development life cycle is a formal process, or a series of steps used by an organisation to plan, design and implement new systems or software irrespective of whether the new system is developed “in-house” or utilises standard commercial software (i.e. off-the-shelf packages) acquired from software vendors or represents a transition to cloud computing options.

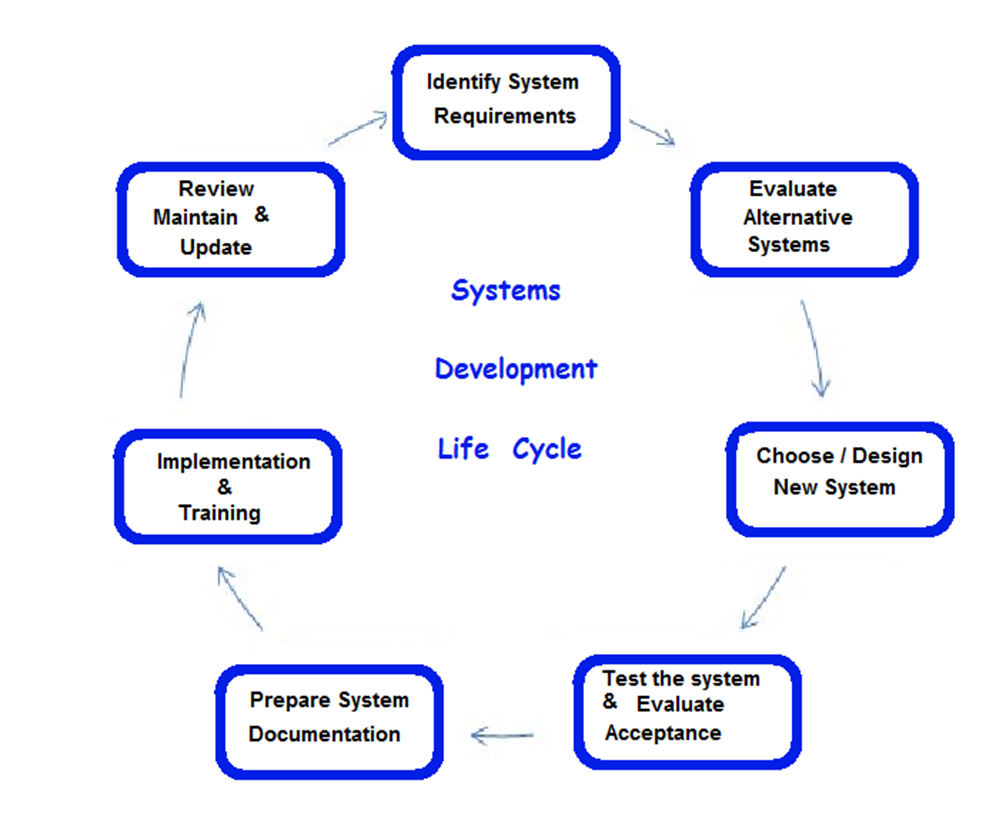


Figure 1 System Development Life Cycle diagram

It is important that the same phases and stages of the systems development life cycle occur when a cloud computing option is being considered by a business.

These stages broadly include:

* Identifying requirements in the initial phase.
* Costing and comparing costs to benefits of alternative systems and cloud options.
* Choosing the best options.
* Planning and documenting the plan/proposal/business case for the chosen alternatives/options.
* Communicating the proposal/business case to management to seek approval to commit the organisation to the new system.
* Implementing the cloud option once approval is granted.
* Training staff on the new system, and
* Doing a post-implementation review.

Even though moving to a cloud-based option may not be not as expensive as buying and implementing new software and hardware systems in-house, businesses still need to choose wisely. As the many articles identified, there can be significant costs for exiting contracts and service/usage agreements early. You may be left without access to your data that has been stored on a cloud service or lose your website that has been built for you and maintained by a cloud provider if you cease a cloud option previously chosen.

There is also the risk of losing control over the security of your data and systems, and privacy breaches occurring, which could have additional legal ramifications depending which industry you are in.

To get management approval for a proposed new cloud system, a formal Business Case based on the businesses’ long and short-term planning considerations is to be prepared to support the recommendation.

In this unit, students will be required to prepare a Business Case (i.e. a formal plan including costings) for cloud options they have researched earlier and have decided meet the information systems and computer needs of the business type in the industry they have chosen to research. This enables the student to experience what it would be like in the workplace if they were responsible for researching and advising management on whether they should move services to the cloud and which services or information systems they should transfer to the cloud. Depending on your knowledge and skills using Microsoft PowerPoint you may want to watch the optional videos listed in the Reading List on Page 44.

The aim of most businesses is to maximise profits by taking advantages of opportunities to improve productivity, customer relations, and the businesses’ reputation in industry. Any major changes to operations need to fit with an organisation’s overall goals, mission and vision.

Business managers aim to minimise risks and threats that could affect continuity of business operations. Proper planning and consideration with formal accurate costings help businesses minimise threats and risks and ensure proposed changes are economically feasible and that the benefits of implementing new systems choices (including cloud options) outweigh the costs.

## Prioritising introduction of cloud computing

Now we will look at developing a plan to successfully introduce cloud computing into your business.

This includes how to prepare a budget in order to cater for the short and long-term priorities of your business following your organisation’s policy and procedure requirements and outlining the steps and activities required.

### Long and short term goals

What is the difference between short and long term goals?

The difference between short, medium and long term goals is the timeframe of each and the implications that this has on the overall objectives and vision of the business. These goals often have an entirely different level of detail involved in the specifics of the goals.

#### Short term goals

Short term goals are generally those relating to that financial year in a time frame from now until the end of the year (e.g. up to a year away). An example might be to increase turnover by 8% and increase profit by 9% by the end of the financial year.

#### Medium term goals

Medium term goals are generally those that relate to a period from 18 months to three years or sometimes five years (whichever is appropriate for the organisation and people setting the goals). These goals will therefore be broader, can be reviewed and may need to be amended with time. An example might be to relocate new premises by March 20x3.

#### Long term goals

Long term goals are generally more strategic in nature and so tend to relate to a period of ‘in the next five to ten years. For example, a strategic goal for the business might be to expand core operations to two other countries in the next 10 years.

Of course, the medium term will become short term with the passing of time and should be reviewed and updated with this in mind.

It is imperative when setting business goals, short, medium or long term that they follow the principle of SMART goals, in that they are:

Specific

Measurable

Achievable

Realistic

Time bound

to be truly effective.

### Short term considerations

In relation to the introduction of cloud computing, these might include the following:

* Identifying essential systems that must continue to operate. These are referred to in your textbook as mission critical systems.
* Choosing which services to convert to the cloud e.g. file storage or access to software products such as cloud-based computer accounting software options like Xero or Reckon.
* Security and administrative controls required to protect systems and data from unauthorised access.
* Choosing a cloud provider.

### Long term considerations

Long term considerations in this instance would include:

* Ensuring data and reporting integrity.
* Ensuring reports meet current and future information needs and comply with any legislative requirements.
* Ensuring the administration and support received from the cloud provider meets the organisations servicing requirements and standards and the cloud provider can be contacted about problems and issues and rectifies these promptly.
* Ensuring the costs remain within planned parameters and that the cloud services are meeting the businesses needs and delivering the expected benefits that were planned in the cost/benefit feasibility planning and selection stages of the project.

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| E:\TAFE Digital\Projects\Accessibility Project - 03.04.2018\Template - SkillsPoint\Template - Icons\Reading LAVENDER.png | Suggested reading |

Thomas, L, 2018, *Introduce Cloud Computing into Business Operations*, Better Teams Publications, Strawberry Hills, Australia.

Thoroughly read pages 99 to 108 of the recommended textbook to gain an understanding of how to develop a plan to introduce cloud computing.

### 

|  |  |
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| Practice activity icon | Practice activity |

## **Activity 3.1: Short term and long term goals**

Using the S.M.A.R.T goals principle, record below three goals (either short term or long term) that you would want to achieve when implementing cloud computing into your business.

## Prepare a budget

### Prepare a budget for short and long term priorities

The cost benefit analysis which was discussed in topic 2 will contain estimates of the anticipated future costs.

Please note that there will come a time when the detail of those project costs need to be re-examined and refined.

Thomas, 2018 (p.p.103-104) states that a cloud transition project will have two major cost components:

* The costs for the transition project itself (i.e. the Set-up Costs).
* Ongoing costs that the business must commit to indefinitely once the transition project is complete. This can comprise base rental, access and usage charges.

#### Costings

Primary costs for consideration include:

* The costs from the selected cloud provider applicable to the services or range of services they offer.
* The use of cloud services will require a lot of continual transferring of data (i.e. uploading and downloading of data). There will be an associated cost of upgrading the business’s data plan with their telecommunications provider (Telstra, Optus, Dodo etc.) to make sure it is sufficient to handle the volume of transactions and speed of access to data and systems that will be needed.
* The costs associated with an external consultant as project manager if needed or the cost associated with bringing staff together to form a steering committee for the cloud conversion project.

#### Set up costs

Set up costs might include the following:[[10]](#footnote-10)

* The cost of using IT experts or external consultants in the analysis and implementation phases of the conversion project.
* The cost of software required to initially transfer data to the cloud.
* The wages and associated on-costs of all staff involved in all aspects of the conversion process (referred to in your textbook as staff time costs).
* Costs associated with ensuring data is accurately transferred, new systems are operating effectively and that systems can continue to operate (referred to in your textbook as synchronising costs).
* Costs associated with linking or integrating these new cloud systems, services or platforms with remaining in-house systems or technologies (referred to in your textbook as systems integration costs).

For a more detailed description or explanation of these set-up cost categories - read page 104 of your textbook.

#### Ongoing costs

Ongoing costs for adopting cloud options might include the following:[[11]](#footnote-11)

* Fixed set fees for cloud services.
* On demand variable cloud costs based on usage of certain modules of software programs (for example in the case of Xero accounting package—the module options chosen) or time usage factors (e.g. the number of hours/minutes of processing time used) or the amount of data being stored on cloud data servers.
* Data costs from your internet provider for accessing, uploading and downloading data and having the ability to access the data on a wide range of different devices from a range of different locations.
* Other associated costs including maintaining and checking upon security, archiving data, backing-up data and ensuring data will be available for auditing purposes (tax audits and external audits of the accounting records) to meet the legal requirements of businesses.

For a more detailed description or explanation of these ongoing costs - read page 104 of your textbook.

### Steering or project committees / board of directors

A steering or project committee is usually appointed in the systems planning phase to oversee the activities of a project. Depending on the size of your project, members of the committee may include: Chief Executive Officer, Chief Financial Officer, Chief Information Officer, senior managers from other areas, senior information technology department managers and internal auditors. They ensure that your proposal and business case is sound before presenting it to senior management for final approval.

Once final approval is received the implementation phase can occur.

These committee members should consult or involve users of the systems, external auditors, and external systems analysts/consultants if necessary in the design and recommendation of any new system including cloud-based systems, platforms and services.

The steering committees’ responsibilities will include:

* Resolving conflicts among managers and users over the new system.
* Breaking the project down into a series of stages with timings and responsibilities identified and assigned.
* Assigning priorities to specific project tasks or stages associated with introducing the cloud services.
* Approving and allocating an overall budget regarding the new cloud system options.
* Reviewing the status of the project and its successful implementation.
* Developing checkpoints within the project where stop or keep going may be part of the decision-making.
* General decision-making and steering of the project especially as unforeseen issues arise.

## Steps and activities to introduce cloud computing

### Setting up a major business project

The steps in any major project for business include:

* Initiation of the project: What is the project? Who needs to be involved? Create the project team.
* Detailed project planning, including approval of the budget and schedule for the project.
* Identifying the milestones.
* Execute the plan.
* Monitor the project and completion of the milestones amend where required.
* Closure of the project including reporting on outcomes and results.

#### Steps/activities checklist

Milestones to be achieved/checked off in relation to the introduction of a cloud computing ICT option may include the following steps or activities:

|  |  |
| --- | --- |
| **Step / activity** | **Achieved (✓)** |
| Establish the need for a project proposal |  |
| Set an overall budget limitation for the project |  |
| Approve the overall budget and allow the needs analysis and feasibility stages of the project to commence |  |
| Identify all systems to be transferred including their system requirements (identify inputs, processes and reports required from the systems) |  |
| Research available cloud services and cloud providers |  |
| Evaluate alternative systems and cloud providers |  |
| Feasibility study completed with cloud service and cloud provider initially selected based on budgeted cost/benefit analysis |  |
| Business case plan including cost benefit analysis documented and presented to management |  |
| Business case approved |  |
| Make initial plans and arrangements with cloud provider prior to signing contracts or agreements. The final contract arrangements will be subject to satisfactory testing and acceptance of the system and/or the completion of a trial period |  |
| Check the Cloud provider will allow the test running of the new system otherwise look for a new cloud provider |  |
| Check internet plan is sufficient or arrange a new updated plan as required |  |
| Determine the order of transferring systems and data |  |
| Test cloud services with dummy systems and dummy data |  |
| Sign-off satisfaction with pre-live testing and that cloud system appears to be reliable |  |
| Train staff to the varying degrees as outlined in plan |  |
| Organise new admin and security procedures over security of your cloud services and data as required |  |
| Establish and finalise the project team for implementation. Select external consultants where required |  |
| Finalise timeframe for upload of data and changeover order and changeover method of converting data especially critical live systems |  |
| Identify all systems to be transferred including their system requirements and where their data is stored and what is the latest version of the data |  |
| Transfer data |  |
| Have back-up/recovery plan ready to use if anything goes wrong. |  |
| Synchronise data with remaining existing in-house hardware, software and systems |  |
| Compare and check data against old system where a parallel run method of conversion was chosen or deemed desirable |  |
| Check and prove the system is operating properly |  |
| Check users have accepted and are happy with the new system (i.e. confirm it meets their needs) |  |
| Prove the systems integration and reporting is working and the system is providing the desired results and reports |  |

Reference: Thomas, L 2018, Introduce cloud computing into business operations, Better Teams Publications, Australia pp.105-6

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| Practice activity icon | Practice activity |

## **Activity 3.2: The four phases of cloud transition**

Cisco outlines that organisations must approach the cloud transition in the following four phases:

1. Strategic preparation
2. Planning design
3. Implementation
4. Optimisation

These are explained in the following article on [developing a cloud computing strategy](https://www.cisco.com/c/dam/en/us/services/collateral/services/services-education/cloud_101_higher_education_wp.pdf). Refer to page 5 of this PDF article and summarise your understanding of the four phases of cloud transition.

### Preparing a PowerPoint presentation

#### Optional videos

|  |  |
| --- | --- |
|  | Watch |

Watch the video [The Beginner's Guide to Microsoft PowerPoint](https://www.youtube.com/watch?v=XF34-Wu6qWU) on YouTube published by Technology for Teachers and Students on Sep 18, 2017 (Duration: 23:12 minutes)

or

Watch the video [Learn PowerPoint - 2018 Beginners Tutorial](https://www.youtube.com/watch?v=u7Tku3_RGPs) on YouTube published by Teacher's Tech on Jul 9, 2018 (Duration: 26:15 minutes).

Topic 4

Support

implementation

# Topic 4: Support implementation

## Change-over/conversion options when converting to any new system

The main methods of changing over systems are:

### Cold-turkey conversions/changeovers

This involves switching off the old system as soon as the new system starts to be used. This is the riskiest conversion method as errors or bugs may start to appear that weren’t seen in the testing or evaluation phase and the quality and reliability of reports may be adversely affected. This could potentially affect the operations of the organisation and potentially prevent management from meeting reporting requirements.

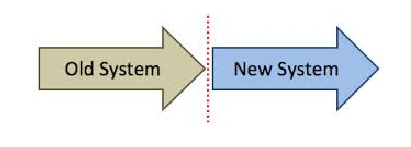


Figure 2 Old System New System diagram

### Phased-out/modular approach

Involves switching over to the new system in stages.

### Parallel running both systems

Involves running both the old and new systems for a period of time, comparing the output to assess that the new system is operating reliably before turning off or discontinuing the old system. This is recommended as the safest way of ensuring continuity of operations and ensure all legal and reporting requirements can be met by a business.

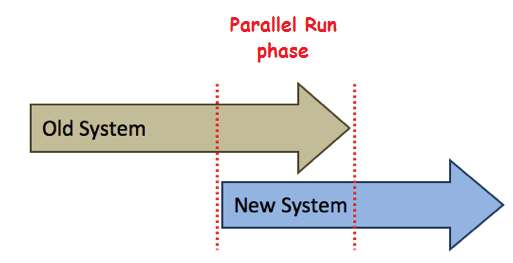


Figure 3 Old System New System diagram

Where feasible, the latter option (parallel running the old and new cloud systems) for a short period of time is strongly recommended to ensure the new system is meeting the businesses’ needs, allowing continuity of operations and the meeting of information reporting requirements that businesses have.

The likely success of any ICT conversion project will be heavily affected by the amount of planning that was done in the early phases of the development process (i.e. in the identifying needs, quantifying the costs and assessing/comparing these to the expected benefits, and comparing alternatives). Another important factor affecting success is whether the person or persons allocated to manage an ICT conversion project had the time, knowledge and experience to manage the project properly. A significant number of ICT projects fail because phases of the systems development life cycle model are either skipped or inaccurately done (i.e. inaccurate or incomplete costings given to management or training and support was not included in the costings etc.). Individual project managers are often substituted for Steering or Project committees. These project managers may not have the skills to make the best decisions. This project may have been added to their list of duties as a side role, and they may be extremely busy with other main work functions, and the conversion project may not get the attention to detail that it needs to be successful. The importance of the planning phases and selecting the right people to manage the project and its implementation will be big factors in the eventual success.

## Implementing the plan

To support the implementation of your cloud computing plan you should consider responding to the following.

* How you will communicate and promote key features of the plan to others and ensure they will accept and embrace the changes.
* How you will organise the training and coaching to maximise cloud computing potential. Training needs to be sufficient so that the staff that will be required to use any of the new cloud systems, services and platforms will be fully operational at the completion of the training and coaching.
* How you will encourage and support individuals and work groups to become more efficient using cloud computing. This includes allowing them to make continuous improvement recommendations and following through with further planning where they can see additional ways cloud products could be made useful or added for small additional costs.

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| E:\TAFE Digital\Projects\Accessibility Project - 03.04.2018\Template - SkillsPoint\Template - Icons\Reading LAVENDER.png | Suggested reading |

Thomas, L, 2018, *Introduce Cloud Computing into Business Operations*, Better Teams Publications, Strawberry Hills, Australia.

Read pages 114 to 116 of the recommended text for additional guidance on the areas noted above.

The role of the person or steering committee managing the cloud project’s implementation may include explaining to the businesses’ general staff:

* what cloud computing is about
* how it serves the business
* how it is a step forward from the current situation and
* why the option was chosen (i.e. how the benefits are seen to be greater than the costs or that it will allow the business to remain competitive in the market place as rival competitors are already using the new technology and platforms).

This is to ensure all staff are aware of the proposed changes and new systems and will accept the need to change.

Additional training and coaching will be required for those more directly impacted by the new systems (e.g. users). This is likely to be a large expense and involve staff across the entire organisation. A successful training strategy is vital to ensure continuity of business by making staff using the new cloud systems and platforms operational in their use.

#### Training

Training staff in the use of the new cloud systems and platforms is essential if staff are to be effective and efficient operators of the new system.

Training usually covers systems training for those people who will be responsible for administering, modifying or supporting the system as well as operational training for those end users who will be using the system. In many cases one of the reasons for transitioning to the cloud has been that the internal need to administer, modify and support systems has been transferred from being an organisation responsibility to being that of the cloud provider. Again, this depends on the type and scope of cloud service or system being adopted by a business.

Courses, manuals, on-the-job training and hands-on practice sessions are all ways of familiarising staff with the new system. Providing access to post transition support services and experienced, skilled IT experts/consultants is another way of assisting staff with additional training for the more high-end users of the systems.

#### Desirable outcomes & implementation issues

The following is a summary of the desirable outcomes of the development and implementation of any new cloud-based information technology system or platform:

* on-time
* on-budget
* full functionality
* reliability
* user acceptance
* favourable costs to benefits ratio
* low maintenance costs
* able to be expanded or enhanced or modified as needed in the future
* integration with other systems.

Positive outcomes above will minimise implementation issues with the new system.

Common implementation issues include:

* Directionless implementation i.e. no real project manager assigned to handle and resolve implementation issues.
* Those assigned to manage the implementation are either too busy or lack the skills needed to manage the project and resolve any technical or operational issues.
* It takes too long to implement the new system.
* Data is not converted properly.
* The new system fails to deliver the required or promised outcomes.
* ‘Bugs’ are identified in the accuracy or processing methods used in the system. A testing of the system or trialling of the system prior to implementation/adoption would most likely have identified such issues.
* Incorrect costings or hidden costs not recognised or considered in planning and feasibility stages make the continuation of the project unviable.
* Timeframes for implementation and training requirements are underestimated.

#### Review, maintain and plan updates or modifications to the new system

The review stage of a project including converting to cloud systems and platforms is important. However, it is often not taken seriously enough and may be inadequate.

During this stage a business needs to revisit the user requirements and assess whether the new system meets the objectives and user specifications. To help determine this Acceptance testing (or User Acceptance Testing), can be conducted to determine whether the system is working as intended.

Process requirements identified in the needs identification phase can change (due to the introduction of subsequent legislation for example), and changes can sometimes be misinterpreted, and the final system may not meet the intended needs of the users.

During this final review phase, the users will confirm whether the application meets their business’ needs and is operating as intended.

It is important to determine whether the new system is providing all the required reports to allow management to fulfil their corporate governance and financial reporting responsibilities (including legislative requirements).

Maintenance of the ICT system includes planning for hardware and equipment to be serviced and updated where these are not part of the cloud solution i.e. where cloud software or systems are being used and accessed on in-house computer equipment. It involves planning for consumables to be purchased on a regular basis. It should involve planning for after-sales technical support and the procedures regarding licences, royalties, maintenance fees, updates and upgrades and any associated costs for these services.

If there are problems with the system, then the organisation may need to approach the cloud provider to request modifications to the systems or platforms or the organisation’s planning and steering committee may need to re-group and consider its other options. Ending an agreement with a cloud service provider can be costly. There could be large exit penalties. The services you have been using may not be able to be transferred to other providers, or easily brought back in-house if the need arises.

#### Project risks and risk management

There are a number of reasons why large ICT projects or conversions fail:

* Underestimating the work required in transferring the system.
* Not applying a System Development Life Cycle (SDLC) approach to the conversion of computer systems to cloud options, and replacing a SDLC with an inadequate needs analysis, planning and implementation form of planning and follow-up.
* Misunderstanding user requirements and the internal use of computer equipment and technology.
* Not identifying a system as a mission critical system upon which business continuity relies on.
* Not identifying computer equipment as essential to continuity of business.
* Inadequate planning, i.e. planning not being detailed or thorough enough.
* Causes of problems or issues with existing systems not being properly diagnosed.
* Communication errors or not consulting properly with cloud providers regarding needs.
* Delays in approval.
* Skills shortages in current staff i.e. staff not able to gain the skills needed to use the new cloud systems and platforms.
* Shortage of skilled and willing staff to adopt the new cloud systems, technologies and platforms.
* Cloud providers not being available for system maintenance and after-sales service & support.
* Cloud providers ceasing their operations and leaving the organisation without essential services, systems and support.
* Inaccurate estimating of costs and benefits of alternative cloud system options.
* Not being aware of all the options available.
* Not fully testing the new cloud system by not having a design and testing phase prior to implementation and prior to the signing of agreements or contracts.
* Poor control and review processes.
* Lack of support to the team (users, management, steering committee, analysts, programmers, trainers).
* Poor project management skills of the project manager or within the project steering committee.
* No one really taking control of the project – no project manager of steering committee assigned.
* Failure to pay for systems support and upgrades limiting the functionality and future capability of the new cloud system.
* Not having proper systems documentation or user manual for users - inhibiting users’ ability to effectively use the system.
* Cloud system and options which are too tailored or specific and cannot be transferred to, or incorporated into other providers systems, or brought back in-house if needed.
* Cloud providers selling a current system but not being willing or capable of modifying and updating the system in the future as needed by the business or the industry.
* Not being aware the cloud system has bugs that affect its reliability and functionality.

Clear communication with users, project managers/steering committees and cloud providers is essential at all stages of the system development life cycle.

Regular project status reviews are advisable once the cloud conversion project is underway. The use of some skilled, independent, non-executives on the steering committee will strengthen the effectiveness of that committee in making well informed decisions and avoiding many of the risks identified above.

#### Providing reports to stakeholders

Once your cloud conversion project is completed and the new system has been fully installed, there are some procedures you need to complete to finalise your venture, e.g.:

* A final summary report for the project manager/steering committee on the success of implementing the new cloud systems and platforms.
* An overall assessment whether the new cloud options chosen are reliable and meeting users’ needs as planned as well.
* Whether the cloud options have been successfully accepted by users.
* Whether users are fully operational in the use of the cloud systems and platforms.
* Whether any future extensions or add-ons are envisaged.

This report will indicate the final cost of the cloud conversion project including how much over or under budget it ended up.

The overall success of a project is often measured by how closely the final project costs, match the projects baseline or budgeted costs as well as whether the project objectives were achieved in the timeframes given for the design and implementation of the new cloud-based systems.

### RECAP - introduce cloud computing into business operations

Review computing needs in business—In an existing business there will be various computer technologies in use, each providing something that's important.

Investigate cloud computing services to meet business needs—Cloud refers to a provision of scalable and measurable IT resources. Undertaking a cost benefit analysis will help support a business case for introducing cloud computing. Cloud computing offers many benefits including staff efficiency, employee collaboration and data storage solutions.

Develop a plan to introduce cloud computing—Determine short and long term goals and outline steps and activities required to introduce cloud computing into the business.

Support implementation of the plan to implement cloud computing—Communicate and promote key features of the new cloud systems, organise training and encourage and support individuals and work groups to effectively use the new cloud systems and platforms.

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| Practice activity icon | Practice activity |

## **Activity 4.1: Implementing cloud services**

The attached article from The Australian Government is [a guide to implementing cloud services](https://www.finance.gov.au/files/2012/09/a-guide-to-implementing-cloud-services.doc). Read the article and summarise the important steps you should take when implementing cloud services.

# References

#### Textbooks

Thomas, L, 2018, *Introduce Cloud Computing into Business Operations*, Better Teams Publications, Strawberry Hills, Australia.

#### Websites

Arcitura, *Cloud,* Arcitura, viewed 14 June 2019, <<https://patterns.arcitura.com/cloud-computing-patterns/basics/basic-concepts-and-terminology/cloud>>.

Art Systems Canada, *Top 10 benefits of Google drive,* Art Systems Canada, 14 May 2012, viewed 14 June 2019, < <http://www.art-systems.net/blog/10-benefits-of-google-drive/?lang=en>>.

Axelsen, Michael, *Five challenges to cloud computing success,* CPA Australia, 6 Oct 2017, viewed 16 June 2019, <<https://www.intheblack.com/articles/2017/10/06/challenges-cloud-computer>>.

Baguley, Joe, *How cloud computing is changing the world… without you knowing*, The Guardian, 25 Sep 2013, viewed 14 June 2019, <<https://www.theguardian.com/media-network/media-network-blog/2013/sep/24/cloud-computing-changing-world-healthcare>>.

Centrom, *How is cloud computing cost effective?,* Centrom, 13 June 2013,viewed 14 June 2019, <<http://www.cetrom.net/uncategorized/how-is-cloud-computing-cost-effective>>.

Cisco, *Developing a cloud computing strategy for higher education,* Cisco, viewed 14 June 2019, <<https://www.cisco.com/c/dam/en/us/services/collateral/services/services-education/cloud_101_higher_education_wp.pdf>>.

Deloitte, [*Cloud accounting is revolutionising how accountants work*](https://www2.deloitte.com/au/en/pages/deloitte-private/articles/deloitte-private-cloud-accounting.html)*,* Deloitte, viewed 14 June 2019, <<https://www2.deloitte.com/au/en/pages/deloitte-private/articles/deloitte-private-cloud-accounting.html>>.

Department of Finance and Deregulation, *A Guide to implementing Cloud Services,* Australian Government, Sep 2012, viewed 14 June 2019, <<https://www.finance.gov.au/files/2012/09/a-guide-to-implementing-cloud-services.doc>>

Drake, Nate, *Best cloud storage of 2019 online: free, paid and business options,* Techradar, 8 June 2019, viewed 14 June 2019, <<https://www.techradar.com/au/news/the-best-cloud-storage>>.

Ecourse Review, *On Premise VS Cloud Computing - Pros and Cons Comparison,* YouTube, Jan 26 2017, viewed 14 June 2019, <<https://www.youtube.com/watch?v=KVydGQGR1Lo>>.

Ecourse Review, *Cloud Computing Services Models (laaS, PaaS and SaaS explained)*, YouTube Apr 5 2017, viewed 14 June 2019, <<https://www.youtube.com/watch?v=36zducUX16w>>.

Eggleton, Mark, *Balancing the benefits and risks of cloud computing,* The Australian Financial Review, 14 Dec 2017, viewed 14 June 2019, <<https://www.afr.com/news/special-reports/cyber-threat/balancing-the-benefits-and-risks-of-cloud-computing-20171214-h04e46>>.

Gcflearnfree.org, *Computers What is the cloud*, YouTube, 8 Mar 2012, viewed 14 June 2019, <<https://www.youtube.com/watch?v=gu4FYSFeWqg>>.

Google, *Using Google drive*, Google, viewed 14 June 2019, <<https://www.google.com.au/intl/en-GB/drive/using-drive/>>.

Kaleb, Joe *MYOB Cloud Accounting Explained,* MYOB, 1 January 2015, viewed 14 June 2019, <<https://www.myob.com/au/blog/cloud-accounting-explained/>>.

Maropost, [*Five real-world examples of cloud computing*](https://www.maropost.com/blog/5-real-world-examples-of-cloud-computing/)*,* Maropost, viewed 14 June 2019  
<<https://www.maropost.com/5-real-world-examples-of-cloud-computing/>>.

Menken, Ivanka, *Top ten SaaS implementation considerations,* Search IT Channel, viewed 14 June 2019, <<https://searchitchannel.techtarget.com/feature/Top-10-considerations-when-implementing-Software-as-a-Service>>.

Mindtools, *Cost-benefit analysis – Deciding, quantitatively whether to go ahead,* Mindtools, viewed 14 June 2019, <<https://www.mindtools.com/pages/article/newTED_08.htm>>.

MYOB, *MYOB accounting software prices*, MYOB, viewed 14 June 2019, <<https://www.myob.com/au/accounting-software/essentials>>.

New gen apps, [*Top ten cloud computing examples and uses*](https://www.newgenapps.com/blog/top-10-cloud-computing-examples-and-uses), New gen apps, 15 Nov 2017, viewed 14 June 2019, <<https://www.newgenapps.com/blog/top-10-cloud-computing-examples-and-uses>>.

Ranger, Steve *How to build a business case*, ZDNet, 6 Nov 2017, viewed 14 June 2019 **<**<https://www.zdnet.com/article/cloud-computing-how-to-build-a-business-case/>>.

Salesforce UK, *Why move to the cloud? 10 benefits of cloud computing,* Salesforce UK,17 November 2015, viewed 16 June 2019, <<https://www.salesforce.com/uk/blog/2015/11/why-move-to-the-cloud-10-benefits-of-cloud-computing.html>>.

Shagin, Abby, *The risks and benefits of Cloud computing,* Digitalist Magazine, 25 October 2012, viewed 14 June 2019, <<https://www.digitalistmag.com/technologies/cloud-computing/2012/10/25/risks-and-benefits-of-cloud-computing-020025>>.

Skills you need, *Writing a business case,* Skills you need, viewed 14 June 2019, <<https://www.skillsyouneed.com/write/business-case.html>>.

Solomon, Andrew, *Privacy and the cloud,* 9 Sep 2010, viewed 14 June 2019, <<https://www.oaic.gov.au/privacy-law/privacy-archive/privacy-speeches-archive/privacy-and-the-cloud>>.

Suse, *Cloud Computing Fundamentals,* YouTube, 17 Dec 2015, viewed 14 June 2019, <<https://www.youtube.com/watch?v=uroryFU78gM&feature=youtu.be>>.

Teacher's Tech, *Learn PowerPoint – 2018 beginners Tutorial,* YouTube, 9 Jul 2018, viewed 14 June 2019, <<https://www.youtube.com/watch?v=u7Tku3_RGPs>>

Technology for Teachers and Students, *The beginners guide to Microsoft PowerPoint,* YouTube, 18 Sep 2017, viewed 14 June 2019, <<https://www.youtube.com/watch?v=XF34-Wu6qWU>>

Techopedia, *Technology Dictionary,* Techopedia, viewed 14 June 2019, *<*[https://www.techopedia.com/definition](https://www.techopedia.com/definition/26551/cloudsourcing)>

Xero, *Connect and collaborate online with cloud accounting,* Xero, viewed 14 June 2019, <<https://www.xero.com/au/why-xero/benefits/online-accounting/>>.

Xero, *Does your business need a mobile accounting app?,* Xero,viewed 14 June 2019, **<**<https://www.xero.com/au/resources/small-business-guides/cloud-accounting/mobile-accounting-app/>>.

Xero, *Xero accounting software prices*, Xero, viewed 14 June 2019, <<https://www.xero.com/au/try/accounting-software/?gclid=EAIaIQobChMIkdOepean2wIVj4qPCh3X3gVxEAAYASAAEgL1lPD_BwE&gclsrc=aw.ds&dclid=CPm3pKjmp9sCFQ99vQode1gAEg>>.

## Additional Resources

### Historic development/evolution of computers

Use the links provided if you would like any further information on [the evolution of computers](https://www.slideshare.net/MukaleleRogers/102-evolution-of-computers) or [the history of information technology](https://www.slideshare.net/fhemrosacia/evolution-of-computer?next_slideshow=1).

#### Recommended videos from reference list:

|  |  |
| --- | --- |
| **Video hyperlink title** | **Full website reference** |
| Computer Basics: What is the Cloud? | <https://www.youtube.com/watch?v=gu4FYSFeWqg> |
| On Premise VS Cloud Computing - Pros and Cons Comparison | <https://www.youtube.com/watch?v=KVydGQGR1Lo> |
| Cloud Computing Services Models (laaS, PaaS and SaaS explained) | <https://www.youtube.com/watch?v=36zducUX16w> |
| Cloud Computing Fundamentals | <https://www.youtube.com/watch?v=uroryFU78gM&feature=youtu.be> |
| Create a presentation in PowerPoint | <https://support.office.com/en-us/article/create-a-presentation-in-powerpoint-422250f8-5721-4cea-92cc-202fa7b89617> |
| The Beginner's Guide to Microsoft PowerPoint | <https://www.youtube.com/watch?v=XF34-Wu6qWU> |
| Learn PowerPoint - 2018 Beginners Tutorial | <https://www.youtube.com/watch?v=u7Tku3_RGPs> |

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| Practice activity icon | Solutions to multiple choice practice activities |

## Solution to activity 1.1

**1.** When something is stored in the cloud it means:

it is stored in external internet servers

2. Select from the components below the ones that can be provided to a business via the 'cloud'.

All of the above

3. When reviewing computing needs in business you should determine current business needs, identify tasks that are undertaken, list all the equipment, obtain data on computer use and stocktake all software and licences. True or False?

True

## Solution to activity 2.3

1. Elastic computing is a term that refers to ability of a customer to purchase cloud services as needed and then return them. True or False?

False

2. Select three fundamental components of cloud computing from the list below.

basics of virtualisation

security and privacy

public, private and hybrid clouds

3. Cloud computing provides several types of processes over the internet. The anagram aaS refers to?

as a Service

1. Thomas, L 2018, Introduce Cloud Computing into Business Operations, Better Teams Publications, Strawberry Hills, Australia [↑](#footnote-ref-1)
2. <https://www.techopedia.com/definition/26815/virtual-private-data-center-vpdc> [↑](#footnote-ref-2)
3. <https://www.techopedia.com/definition/16633/multitenancy> [↑](#footnote-ref-3)
4. <https://www.techopedia.com/definition/4362/software-plus-services> [↑](#footnote-ref-4)
5. <https://www.techopedia.com/definition/26633/hosted-application> [↑](#footnote-ref-5)
6. <https://www.techopedia.com/definition/26560/consumption-based-pricing-model> [↑](#footnote-ref-6)
7. <https://www.techopedia.com/definition/26551/cloudsourcing> [↑](#footnote-ref-7)
8. <https://www.techopedia.com/definition/26598/elastic-computing-ec> [↑](#footnote-ref-8)
9. Thomas, L 2018, Introduce Cloud Computing into Business Operations, Better Teams Publications, Strawberry Hills, Australia [↑](#footnote-ref-9)
10. Thomas, L 2018, Introduce Cloud Computing into Business Operations, Better Teams Publications, Strawberry Hills, Australia p.104 [↑](#footnote-ref-10)
11. Thomas, L 2018, Introduce Cloud Computing into Business Operations, Better Teams Publications, Strawberry Hills, Australia p.104 [↑](#footnote-ref-11)