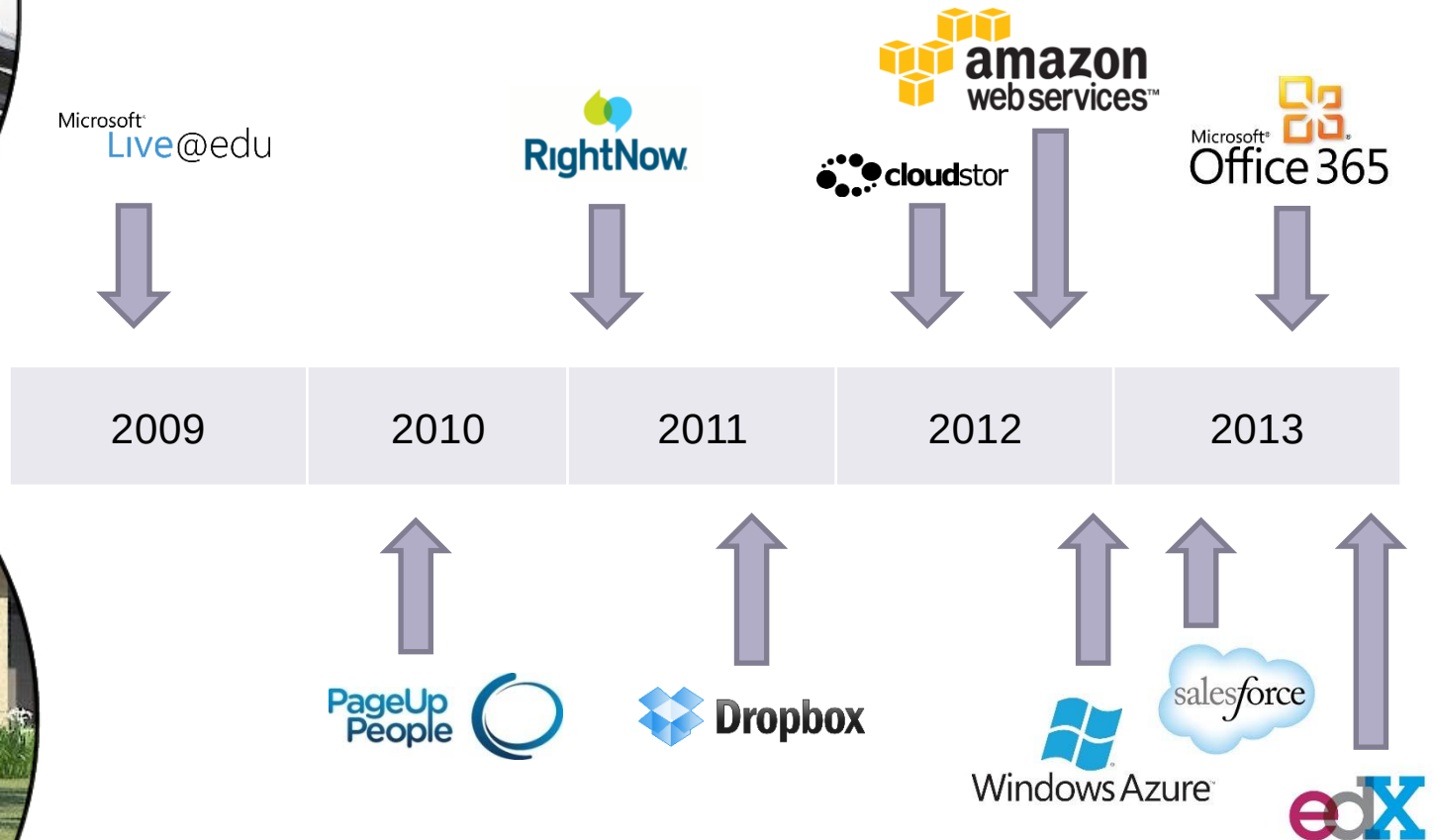




Cloud – Our Frirst Steps

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Timeline - UQ's introduction into SaaS & IaaS





Business considerations as to why

- **Cap-Ex Free**

Why own all the expensive equipment when it requires extra resources to test, fix and manage? These costs will never decrease, so pay-per-use in some scenarios may be a better option. Servers have to be upgraded, whether it is for space, or regular use, and then important network hardware and other datacenter infrastructure that is also continuously upgraded and monitored.

- **Competitiveness**

Corporate infrastructures are changing all the time, with more and more pressure for IT departments to get the biggest bang for their buck, and stay a head of the game. This goes hand in hand with having a flexible, on-demand system. With SaaS & IaaS, companies are able to access real-time information of inventories and production which leads to more accurate implementation timeframes, reports and better decision making for scheduling, forecasts, and budgets.

- **On-demand**

The most important difference you will find over on-premise systems is the flexibility of the on-demand option. Cloud options are robust and flexible enough to accept the cyclical nature of manufacturing. We won't have to worry about the capacity of our system since you pay for only what is used.

- **Reduced costs**

The costs of hardware are allocated and spread across more units, making the total cost of ownership much lower than if you owned it yourself. With shared ownership you can take advantage of having your infrastructure stored in a state-of-the-art datacenter, and not blow your entire budget.

- **Reliability**

How reliable is your back-up plan? Do you have a back-up system in place in case your servers crash, or the power goes out? How about a duplicate or redundant system in another location in case of serious failures? This is all planned out with cloud applications. Testing is done frequently to the back-up systems to ensure integrity and functionality. Monitoring is done 24x7x365 to make sure you have the highest possible uptime rate to access your applications.

- **Integration flexibility**

Legacy systems will always be in contention with cloud options. Retrofitting these systems or other 3rd party systems may take some work in the beginning, but it beats having to enter historic information. So instead of fighting it, have a plan to integrate the 2 options together. Cloud applications can be interfaced with existing systems so you are getting the benefits of your legacy system plus all of the advantages of moving to the cloud.

- **Space/Time Saver**

This is a small but crucial piece of cloud computing, not waiting for the hardware to be delivered and resources to rack, run-up, and test before services can be deployed.



Contractual considerations

- Engaged external legal council with expertise and experience in negotiation of cloud agreements, preparing issue papers, and drafting cloud use policies.
- Cloud providers reserve the right to change the services at any time without notice, enrolling in Cloud support services will give you prior notice of any changes or discontinue services (including removing features or functionality).
- Service Level Agreements may be unilaterally updated by the Cloud provider, 60 days notice is the standard change notice provided via email or posted on the Cloud providers web site.
- You must ensure that customer content does not violate the Acceptable Use Policy and applicable law, You are responsible for any acts of your end users (which are deemed to be acts of Your organisation).
- Suspension clauses
 - posing a security risk
 - in adversely impacting on Cloud systems or any other Cloud customer
 - subjecting Cloud provider to any third party liability
- Termination assistance, for 30 days following termination, Cloud providers agree not to delete customer data and You may retrieve content from the services. However, assistance does not have to be provided in all circumstances by the Cloud provider.
- Governing law, which state and/or country, do you have an understanding or access to advise from this region.



Technical

- What we've done
- What we've found
- Problems
- New considerations to take into account – re-architecture

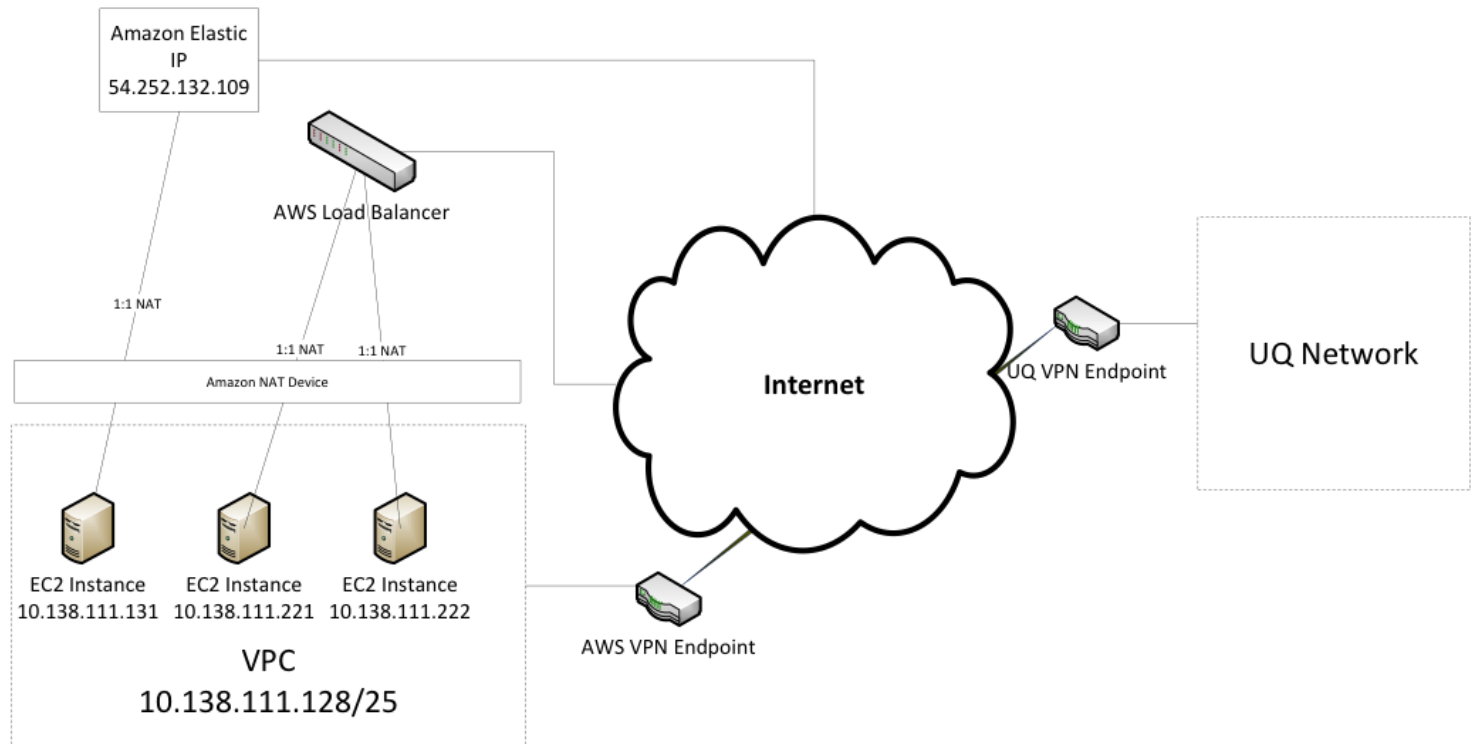


Focus

- Networking (Connectivity is something you need!)
- IaaS
 - Operations of Virtual Machines (VMs) and Disaster Recovery (DR)
 - Complete services (IE: Sharepoint)
- Storage
 - Archiving
 - Active

Networking

VPC Public and Private Routing





EC2 Instances

(Re) Designing for

- Ephemeral (persistent) storage
- Decoupling state
- Failure at any time
- HA and DR require own scripting
- Whole system (application dependencies)

Getting it right first time



What have we *actually* done?

Quick wins!

- IAM – Integration with SSO
- RDS – Fast internet session management indexing
- EC2 – Web serving of research profiles
- EC2 – Replacing VPS for monitoring services (Sydney and US regions)

Coupled infrastructure

- Storage Gateway

Re-architected infrastructure

- Networking
- DR



Summary

- IaaS in Cloud is a new space for UQ
- New technology, new thinking
- Re-architecture
- Phased deployments into Cloud Infrastructure
- Services have a place in the Cloud, just not everything
- Cloud is a partnership with the provider