Data Centre Business Models: The Sherry Trifle

Abstract

Data Centre business models can seem very complicated. Data centre offerings are made up of many different services - from the basic provision of power, space and connectivity to web hosting to IT services to cloud-based software as a service. Data centre operators may offer just one of these services to their customers, or a combination of them. This variety can seem confusing so these notes explain, in an easily digestible form, how everything fits together.

We see the data centre business model as a series of successive layers rather like a fancy cake – or a trifle. At a simple level the anatomy of a data centre business is very much like a trifle because it is made up of different layers of service offering; these in fact are often referred to collectively as the "service stack". And similarly, data centre customers can buy these services in the same way that you might buy sherry trifles.

This isn't rocket science. This pattern is common to most business sectors where within a given market some companies specialise and others provide multiple services. What perhaps singles data centres out is the sheer number of different layers of service, the speed at which new services are evolving and the flexibility for customers to choose their approach according to their requirements.

***NB: Please be aware that this document only provides a loose analogy and should not be taken literally. You cannot eat a data centre, even in bite-sized portions.** For more information on data centres see our other publications*:   [Er, what is a data centre?](#), [Data Centres and Power: Fact or Fiction](#), [So What Have Data Centres Ever Done for Us?](#) *and* [Data Centres: A Day in YOUR Life](#) *or* contact emma.fryer@techuk.org.

The anatomy of the data centre business model

Our sherry trifle shows, in an easily digestible form, some of the different business models that are adopted by data centre operators and their customers. Data centres provide the basis for a wide range of service offerings. These services take the form of successive layers rather like a fancy cake – or a trifle. Some organisations provide just one layer and others provide multiple services – again, a bit like a trifle which you can eat layer by layer or all together. The best place to start is at the bottom, with the alcohol.

So…a data centre is like a sherry trifle because it is made up of lots of different things, generally provided in layers. Let's dissect the layers one by one, starting from the bottom.

Property company (trifle dish)
The trifle dish represents the property owner. This may be a real estate company or a wholesale data centre operator. They are sometimes called the "propco" as opposed to the "opco" (the entity that actually operates the facility).

Colocation services (sponge, alcohol, jelly, fruit)
Colocation (colo) data centres provide "position, power and ping" – guaranteed security, resilience, connectivity and power. The whole point of colo operation is that different companies "co-locate" their IT equipment in a shared facility. So the IT equipment tends to remain the responsibility of the customer and the infrastructure is the responsibility of the data centre operator. Colocation can be wholesale, retail, or a combination ("wholo").

Wholesale services (sponge and alcohol)
Wholesale providers often own the building and provide space on relatively long term leases. Customers tend to take large amounts of space; sometimes a single customer may occupy the whole facility. Infrastructure like cooling is bespoke to each customer's requirement. Wholesale providers include Next Generation Data, Global Switch, Infinity and Digital Realty.

"Wholo" (fruit and jelly)
Some wholesale providers offer retail colocation space as well as wholesale space.

Retail colocation services (custard)
Retail colo customers tend to share pre-existing infrastructure and lease space that is already fitted out ready for action. They tend to take smaller amounts of space on shorter leases. Retail colo operators include Equinix and TelecityGroup. IT hardware maintenance used to be an optional extra but is now usually offered as part of the service by retail colo operators whose onsite staff perform certain maintenance functions on IT equipment (such as re-booting a particular server) at customer request.

Managed colocation /network infrastructure management (blueberries)
Managed colocation is essentially a range of managed network infrastructure services provided by retail colo operators, It is often offered as part of the service package by regional retail providers (ie outside the Central London premium market). Some also offer "interconnection" which provides additional, direct, cross-connections between customers and their partners or service providers.

Managed services, hosting and Infrastructure-as-a-service (strawberries)
This layer includes the services of managed hosting providers (eg Rackspace, Memset and CenturyLink). These companies may operate their own data centres or they may rent space from colo operators. Some just provide the hardware infrastructure which means that they provide all the IT kit for data processing and storage and communication but their customers manage that hardware and install their own software and applications. However it is more typical for hosting providers to manage the hardware too, so they make sure that the servers all work reliably and that there is no unplanned "down-time". This hardware infrastructure management (HIM) can extend beyond operation to providing services that optimise the efficiency or the capacity of the IT hardware, such as virtualisation. Some providers also offer operating system management. More recent business models include the provision of Infrastructure-as-a-Service (IaaS), offered by companies like AWS (Amazon Web Services).

Applications and software services (cream)
The top layer of the trifle represents services relating to software and applications (i.e. the stuff that actually runs on the IT hardware in the data centre). The customer has a choice of approaches and can either follow the "dedicated" approach where they buy a service outright or the "cloud" approach where they buy what they need at a particular time- a bit like the difference between buying a car and renting one. Different approaches suit different customers.

Under the cloud model, offerings include Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). A platform is something that you can develop applications from and includes Microsoft Azure and Salesforce.com. Software as a service means that instead of buying lots of licences you rent software on a pay-as-you-go basis. Under the dedicated model, you can either buy off-the shelf products or bespoke ones developed by systems integrators (SIs) for customers. SIs may provide all the different service layers represented in the sherry trifle. They may run their own data centres or they may rent space in colo facilities or they may do both. Services may be dedicated or cloud based. SIs include Fujitsu, Atos and CapGemini.

Application Management (decorative cherries, hundreds and thousands, etc.)
At the very top is application management where the provider actually manages the software applications (the stuff that is actually running on the machines) for customers.
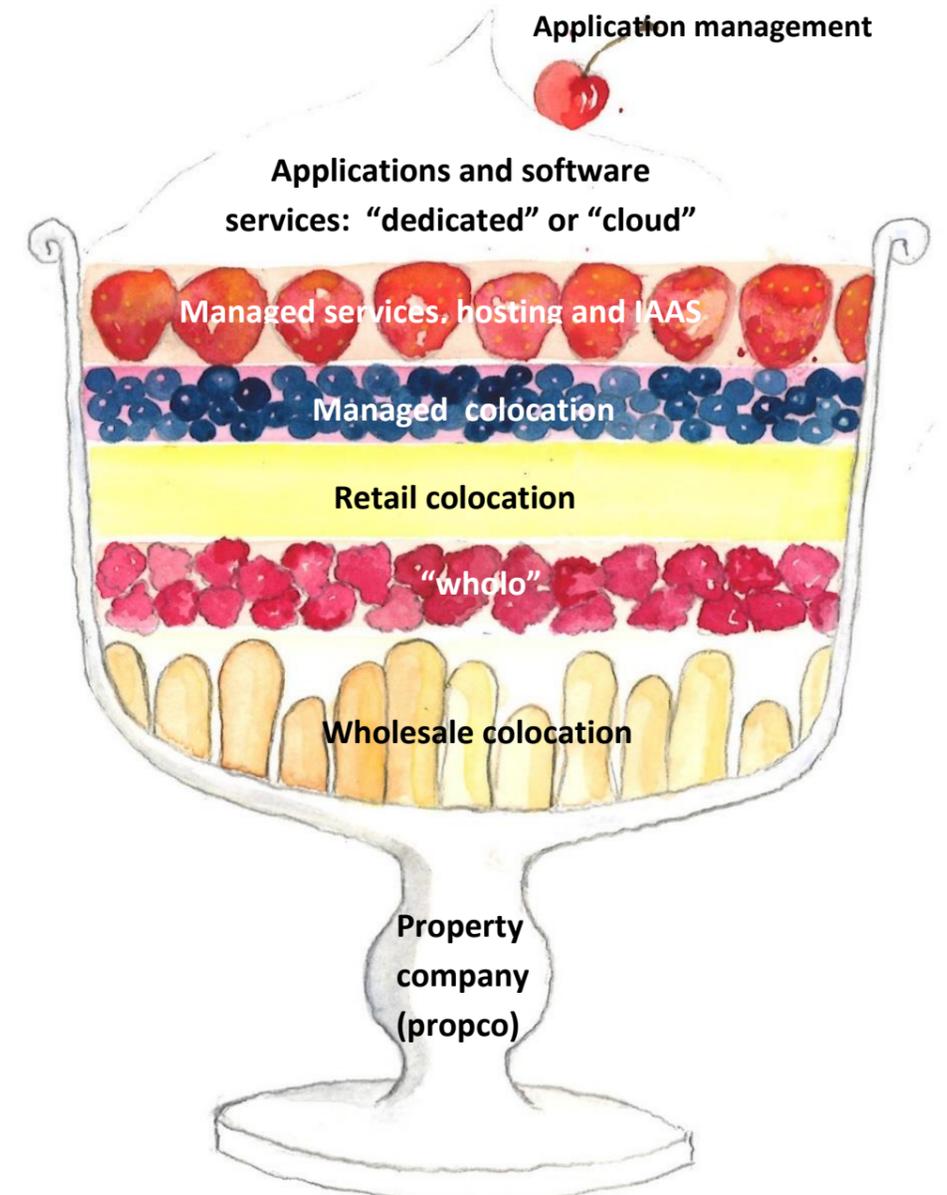
Buying data centre services

Here we look at things from the customer's perspective: how you might go about accessing data centre services: you can do it yourself from scratch, do some of it yourself, do none of it yourself or take a pay-as-you-go approach where you only pay for what you use.

The Sherry Trifle: there are three approaches to putting together a sherry trifle:

Option One: DIY / Mrs Beeton

You can take the Mrs Beeton approach and do everything from scratch: You make your own sherry from grapes you have grown in your greenhouse. You bake your own sponge cake and let it go stale. You grow your own fruit and make your own jelly (not everyone likes jelly in their trifle, so you don't have to use jelly). You make your own custard (probably using your own eggs from your chickens and milk from your cow, though you'd have to buy in the sugar and vanilla). You whip your own cream.
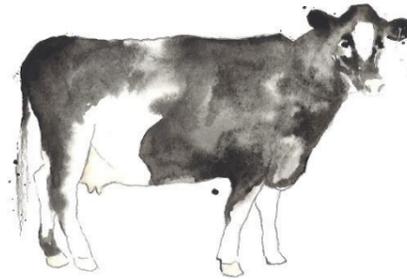
What you end up with is a bespoke trifle that you have made yourself from scratch. Your trifle suits your exact needs and you know exactly what is in it and where it came from. If you don't like raspberry seeds then you can pick them all out before adding the raspberries. However, you've invested a lot of effort in making the sponge, fermenting your sherry and distilling the grape spirit that you fortified it with, keeping chickens and cows and growing fruit. You'd only ever do all this if you needed to make an awful lot of trifle – or if you are *really* fussy.
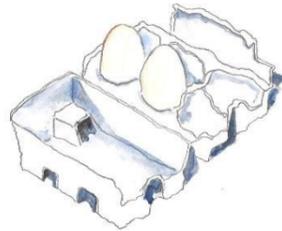
Option Two: Make the trifle yourself but buy the ingredients ready made

You haven't got the time or resource to start keeping cows and chickens or cultivating fruit, and anyway, you don't know much about animal husbandry or horticulture. But you do know how to cook.   So you buy the sherry from Sainsbury's or Waitrose (or pinch it from the drinks cabinet). You can buy trifle sponges – they are sickeningly cheap (around £1 for six at Morrisons). You can buy the jelly and you can buy the fruit – you can choose tinned fruit, fresh fruit or frozen fruit.   You can buy custard powder or you can buy ready-made custard – Ambrosia or even posh custard from the refrigerated section. You can buy whipping cream and build up your biceps or you can even buy a tin of squidgy cream to put on the top, Matterhorn-style (though that will go floppy quite quickly). Or you can do any combination of the two options above, buying in some ingredients and providing others from scratch.   It's entirely up to you.

Option Three: Pay as you go (buy as much ready-made trifle as you need) or an all-in service

The third option allows you to buy in exactly what you need. If you are putting together your own trifle then a true pay-as-you go approach would allow you to buy the right amount of cream, one and a half eggs and a single cherry to make exactly the amount you need. But this doesn't really happen and instead we tend to buy ready-made trifles in the quantity we need. Just go to Marks and Sparks and buy an individual sherry trifle. Or as many individual sherry trifles as you need. Or a sherry trifle for four.   Alternatively if you are having a party you can get the caterers in. They provide as much trifle as you need, and the plates and cutlery, the napkins and tablecloths. They serve it and they tidy up afterwards. You choose.

The Data Centre: there are three approaches to buying data centre services:

Option One: DIY/Self Build

You decide that you are going to build the data centre from scratch to your own specification. You find a suitable site, get relevant planning consents, and start building. You have to arrange power supply, communications connectivity and a whole range of stuff from the mechanical and engineering plant down to generator permits, toilets and parking spaces. If you want it to be bomb proof then you can make it bomb proof– you build it how you want it – your contingency planning can be as neurotic as you like.

Option Two: Operate the IT yourself but buy in the core data centre services from someone else

You still run your own data centre but you don't start from scratch. You don't want all the faff of finding a site and dealing with planning consents and power provisioning so you leave all the tricky stuff (and the grisly capital outlay) to the experts and instead you just put your IT equipment in a data centre that someone else has already built and pay them rent. There are several ways you can do this. The two main options are wholesale and retail colocation where different companies "co-locate" their IT equipment in a shared facility. In the wholesale model you get power, space and connectivity and the supporting infrastructure (eg cooling) is built around your needs by the data centre operator. Retail data centres come with the supporting infrastructure ready and customers share this. So the colocation operator provides the infrastructure and you provide the IT.

But you can buy lots of additional services from your data centre operator, such as "hands and eyes" (where staff onsite look after your IT hardware under instruction) and interconnection (additional cross-connections between customers and their partners). Some companies rent and then re-sell (really sub-let) data centre space and may add any or all of a range of other IT services. Just as with sherry trifles, you can apply any combination of the options, buying in some services and providing others from scratch.

Option Three: buying the finished product (pay as you go or all-in service)

If you want the services provided by a data centre without having to run the facility or buy, rent or operate lots of complicated IT equipment, then you have two choices.

Firstly you have Cloud, which is a "pay as you go" approach to the problem where you simply buy services on demand, but instead of buying a whole package you buy just as much access to infrastructure, software, email or web presence as you need. That's really very flexible. The unit cost may be slightly more but it is usually much cheaper because you are not buying stuff you don't need or incurring up-front costs (in trifle speak you avoid paying out for a big jar of cherries when you only need one).

Alternatively you can go for the all-in service or fully catered approach and use an "SI" (systems integrator) who provides your complete IT service from desktops to applications to data centre services.