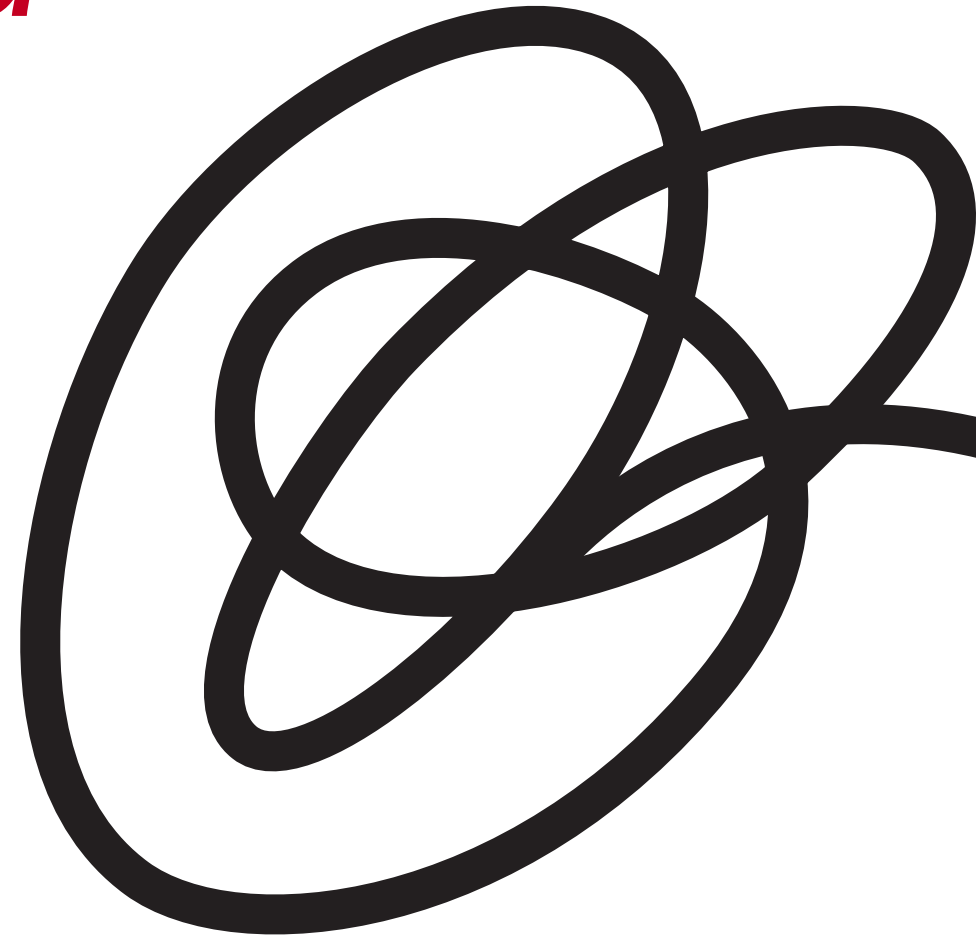


# Hybrid Cloud

## Strategies for Innovative Businesses

*How to get the best-fit cloud environment  
for your organisation*



# INTRODUCTION

## PUBLIC CLOUD AND BEYOND:

### NEW IDEAS ARE TEN A PENNY...

The public cloud turned traditional IT on its head. When anyone can spin up servers in an instant and you only pay for what you use, the barriers to innovation melt away.

All kinds of ideas and business models have taken flight because of the pay-as-you-go, move-when-you-like model of the public cloud, and the world is a more exciting place for it.

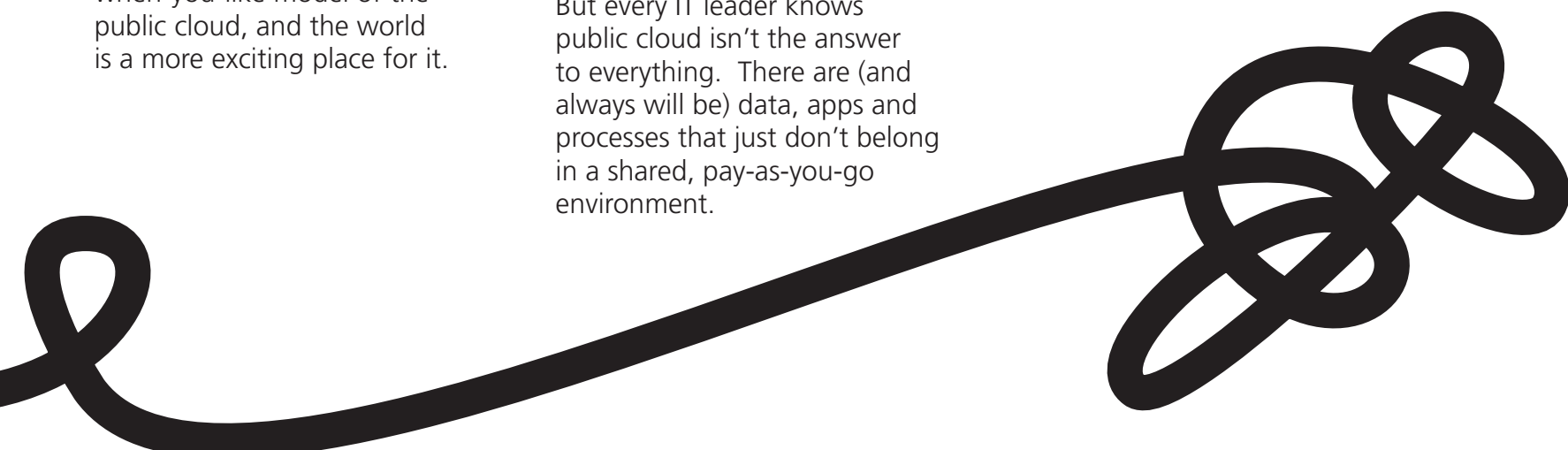
And we're not just talking about Silicon Valley startups. In businesses of all sizes, innovators and experimenters are using the public cloud to get around traditional barriers (securing budget, requisitioning hardware, commandeering IT resources) to get their apps to users – and their ideas to market – faster.

But every IT leader knows public cloud isn't the answer to everything. There are (and always will be) data, apps and processes that just don't belong in a shared, pay-as-you-go environment.

That doesn't mean Cloud isn't the right choice for the business. It just means the strategy has to be more nuanced than simply *"move it all into the public cloud"*.

It means the organisation needs a Hybrid Cloud strategy.

This ebook is about what that is, why it's right, and how you can get there.



# WHY HYBRID CLOUD?

Here at Rackspace, the Open Cloud Company, we love the public cloud. As the co-founder (with NASA) of OpenStack, we helped to invent it and open it up. OpenStack-based public clouds, including our own, are a critical source of low-cost, low-risk computing power for thousands of organisations, of all sizes, in every industry, on every continent.

But from talking to customers every day, we are also well aware of the reality at most organisations: IT needs are sophisticated, environments are complex, risk tolerances vary across the organisation, and transformational IT strategies can take years to implement.

For many applications (and individual application components), the public cloud makes perfect sense. For others, it can seem risky. For some, it doesn't actually make much sense at all.

And that's just today. Perceptions, strategies and technologies are constantly evolving, so if public cloud isn't the right place for something now, it may be in the future (and vice versa).

That's why we – and 99.99% of the organisations we work with – see Hybrid Cloud as the way forward.

[To understand how cloud can help your organisation read our Cloud Benefits report](#)

# WHAT IS OPENSTACK

OpenStack is an open and scalable operating system for building public and private clouds. It provides enterprises and SMBs alike with an alternative to closed cloud environments, reducing the risks of lock-in associated with proprietary platforms.

OpenStack offers flexibility and choice through a highly engaged community of over 6,000 individuals and over 190 companies including Rackspace®, Dell, HP, IBM, and Red Hat®.

[Watch our video to learn more about our OpenStack project](#)



# WHAT IS HYBRID CLOUD?

**Public Cloud:** Infrastructure provided by a third-party and shared by multiple customers. You can instantly and automatically provision and deprovision virtual servers as demand dictates, and only pay for what you use.

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## PUBLIC CLOUD IS GREAT FOR:

.....  
Experimenting with new applications quickly and cheaply

.....  
Getting new applications and services off the ground really, really fast

.....  
Unpredictable workloads that occasionally demand lots of computing resource

.....  
Bandwidth-intensive media delivery

**Private Cloud:** Virtual servers either in your own data centre or a third-party data centre, which you can instantly scale up and scale down to accommodate different workloads. The infrastructure may be shared among different applications, but it's only ever used by your organisation.

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## PRIVATE CLOUD IS GREAT FOR:

.....  
Increasing the efficiency of hardware resources you own (whether on-premise or hosted)

.....  
Ensuring optimum performance and elasticity for cloud-architected applications

.....  
Added peace of mind around data security

**Bare Metal:** Dedicated hardware built to your specifications, usually to run a single, predictable application. Many organisations choose bare metal – either in their own data centre or at a hosting provider – to deliver maximum performance for stable workloads at an attractive price/performance ratio.

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## BARE METAL IS GREAT FOR:

.....  
Stable workloads with predictable usage patterns

.....  
Data that's subject to strict security and residency policies

.....  
Customised applications with tight integration to other apps

.....  
I/O intensive apps like database servers

# HYBRID CLOUD MEANS FINDING THE BEST FIT

THE AIM OF A HYBRID CLOUD STRATEGY IS TO FIND THE OPTIMUM MIX OF PUBLIC CLOUD, PRIVATE CLOUD AND BARE METAL INFRASTRUCTURE FOR THE ORGANISATION.

Essentially, Hybrid Cloud is all about you – because every organisation is different, and can benefit from the cloud in different ways.

In the next few pages we profile four different types of organisation to show how Hybrid Cloud works in different scenarios and why it makes sense.

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## A NOTE ABOUT PORTABILITY

In any hybrid cloud strategy, the ability to move between different options is critical. *For example:*

.....  
Some workloads work well in the cloud today, but may work better on bare metal in future as they become more stable.

.....  
Other applications may need to run on bare metal today because of their license terms, but future versions may be more suited to a cloud environment.

.....  
The ability to move workloads between in-house data centres and external hosting providers is essential to keeping IT strategy lean and efficient.

That's why, at Rackspace, we're fanatics of an open cloud approach that lets you move between deployment models and physical locations at will.

[For useful tips on how to fit Cloud into your business plan read our Understanding Cloud Economics paper.](#)



# SCENARIO 1: ONLINE ROLLERCOASTER

## HYBRID CLOUD FOR UNPREDICTABLE ONLINE BUSINESSES

Web businesses and the cloud are made for each other. When your whole business is online, it's hard to predict demand, with marketing campaigns and seasonal peaks creating huge spikes in transactions.

Buying enough servers to accommodate those spikes would mean huge capital outlay for resources that would lie idle most of the time.

The spin-up, spin-down, pay-for-what-you-use nature of the public cloud is a far more cost effective way of having the compute power only when it's needed.

But public cloud alone may not be the best approach. Transaction volumes may swing up and down, for example, but browsing figures may be fairly consistent. Renting servers makes sense when usage is spiky, but for predictable workloads, dedicated hardware is almost certainly more cost-efficient.

### **Hybrid Cloud solution:**

Keep web servers on owned infrastructure (either in your own data centre or at a hosting provider) and application servers in the public cloud to handle sales spikes effortlessly.

# IT'S A BIT LIKE DRIVING A CAR...

If you only drive occasionally, it makes sense to hire a car when you need it. Few people would seriously consider hiring a car for everyday use. And if one person in the household drives every day, and another only occasionally, a hybrid approach between owning and hiring probably works best.

Public cloud is the same: it's great for getting instant, low-cost, hassle-free access to massive amounts of computing power just when you need it. For predictable stuff you use every day, private cloud or bare metal are likely to be more cost-efficient.

You could think of it in terms of 'own the base, rent the spike'.





# HYBRID HEROES: DOMINO'S PIZZA

Domino's is building its business to cater for a new generation of sophisticated 'on the move' customers, using smartphones, iPads, and mobile apps.

The company wants to meet its customers' needs by delivering an online experience that matches their aspirations.

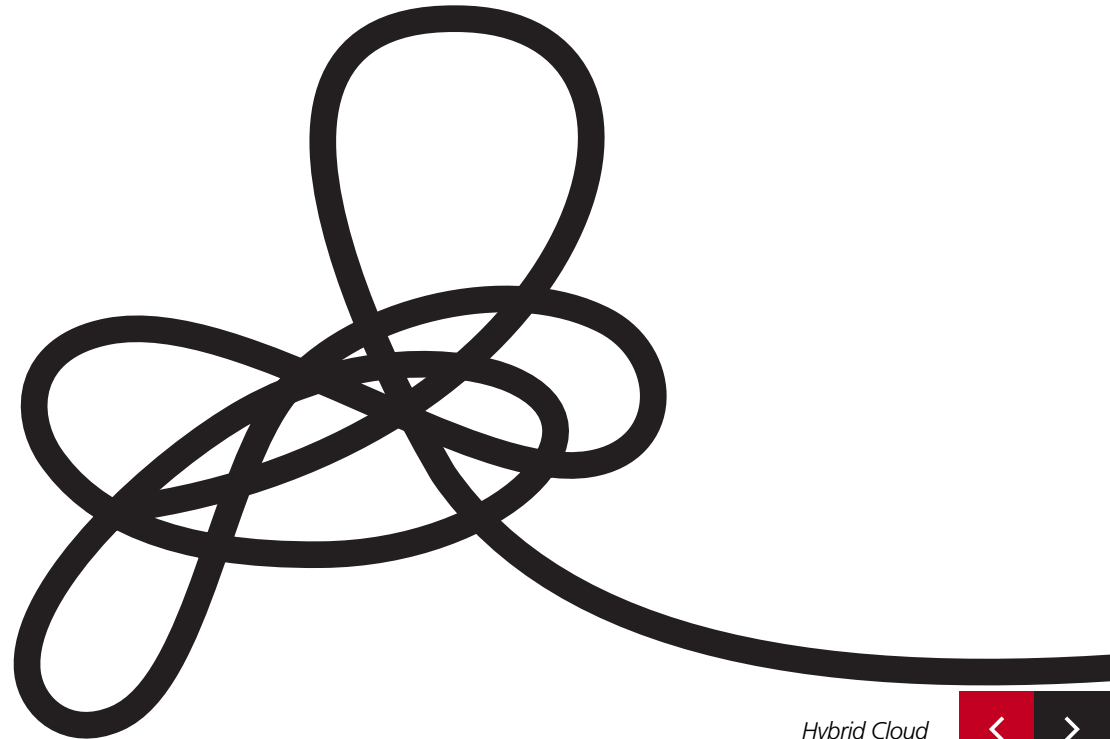
They've chosen a Hybrid Cloud approach, opting for a combination of dedicated managed hosting and the instant scalability and economy of cloud hosting.

Rackspace allows Domino's to choose which applications live where in the managed hosting infrastructure – and move them when needed.

Applications that require a high level of security, such as internal email, can be hosted on highly secure dedicated physical hardware, while the on-demand scalability of the public cloud is ideal for developing new mobile apps or for spinning up virtual servers to handle increased traffic from a huge digital marketing campaign.

"Our online business offering can grow effortlessly to meet the needs of an increasingly techno-savvy and pizza-hungry audience."

**Colin Rees,**  
IT Director, Domino's





# SCENARIO 2: LEGACY NIGHTMARE



## HYBRID CLOUD FOR COMPLEX IT ENVIRONMENTS

The IT landscape at most large enterprises is terrifyingly complex. Multiple data centres (from cupboards to football pitch-size buildings) house hundreds or even thousands of apps, usually a complicated mix of commercial off-the-shelf, home-grown and customised.

A great many of these companies have a long-term ambition to move everything that's not nailed down into the cloud, and reap the cost and efficiency gains.

But most know it will be a long journey: internal politics, existing vendor contracts, organisational concerns and skillsets, and budget constraints aren't conducive to a sudden leap into a new paradigm, even when there's a visionary leading the way.

For these businesses, the journey to the cloud will happen in stages – and here's where a Hybrid Cloud approach can work very well. There are apps that are ready to go to the public cloud today, and people itching to test and develop new apps quickly and inexpensively. The public cloud could save huge amounts on licensing and hardware costs and kick-start the next big innovation.

At the same time, there are apps designed for on-premise use whose license terms will make them impossible or economically unviable to run in the public cloud, and there's data the organisation wants to keep within its own (virtual) four walls – at least for now.

### **Hybrid Cloud solution:**

Analyse application usage patterns and license terms, and identify candidates for public cloud, private cloud and bare metal infrastructure. Move each app (in your own time) to the most efficient hosting environment, and review regularly to ensure optimum efficiency.

# SCENARIO 3: DATA DYNAMO

## HYBRID CLOUD FOR DATA-DRIVEN BUSINESSES

If there's an application that was born for the public cloud, it's analytics. Why invest huge sums in dedicated computing power if you're only going to use it once a month to calculate your risk exposure, or once a year to mine your customer data for interesting patterns?

The far more efficient approach is to burst your datasets out to the cloud when you need to analyse them, spin up enough servers to crunch the numbers, then pull them back down when you're done.

The public cloud is so good for analytics that entire businesses have been built on its ability to crunch massive datasets quickly and cheaply.

You might think these types of business live entirely in the public cloud, but it's not the case. Keeping data in the public cloud all the time can quickly get expensive, especially if there's a lot of it. Better to keep the data and analytics application separate, and only bring them together when required.

## Hybrid Cloud solution:

Keep your data in a safe, efficient place – a database cluster on your premises, or with a managed hosting provider – and burst it on to the public cloud when you want to analyse it.

## Big Data and the Hybrid Cloud

The big daddy of big data doesn't live in the cloud. Google keeps the data it indexes from billions of web pages (its 'Big Table') on its own dedicated infrastructure, but the apps that access it – like the Google search algorithm – run in the cloud.

# SCENARIO 4: COMPLIANCE MINEFIELD

## HYBRID CLOUD FOR HIGHLY-REGULATED BUSINESSES

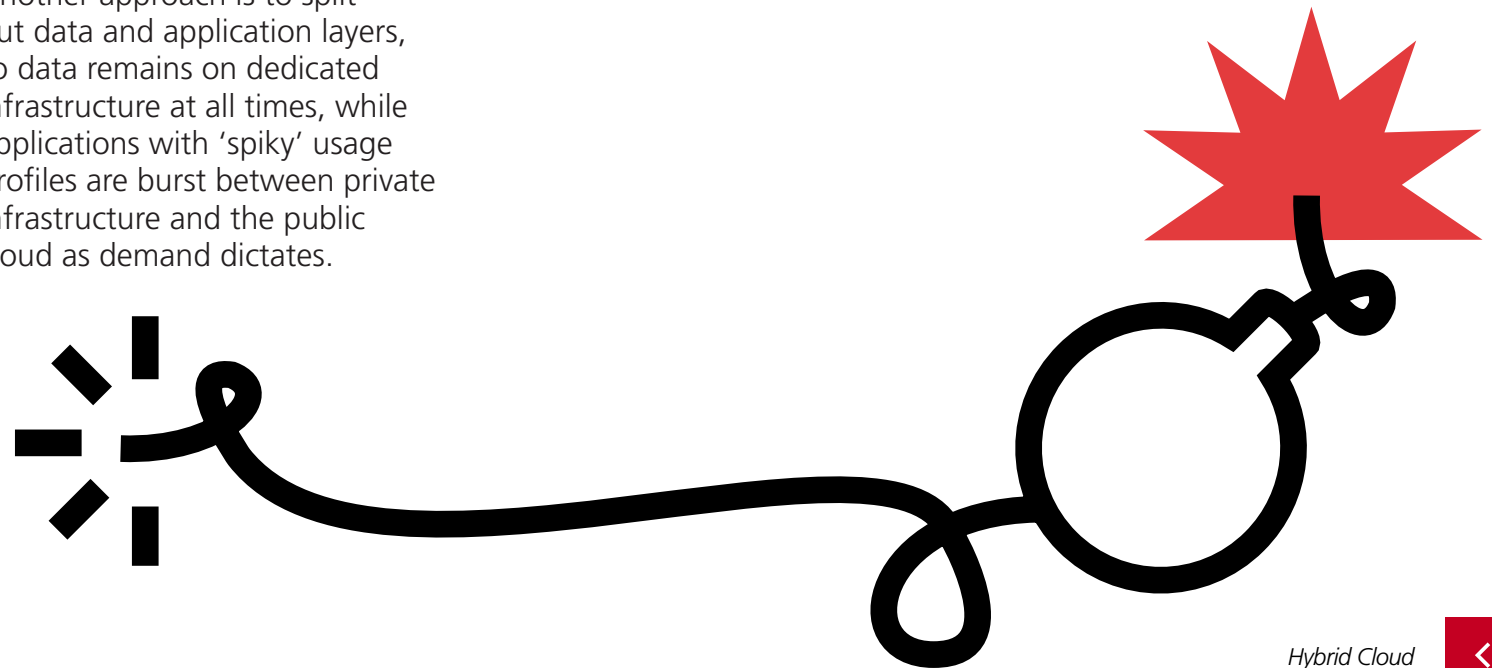
Not every company is free to do what it wants. Many operate in a tightly regulated environment with stringent rules governing data security (at rest and in transit), record-keeping and auditability.

At first look, the public cloud might not seem an ideal place for these businesses to be. And when penalties for compliance breaches can include prison time, why take any kind of risk at all?

But even within highly regulated companies, there are non-regulated activities that are highly suited to the public cloud. New applications can be developed using dummy data, for example, and the public cloud is an ideal and inexpensive testing ground for the next generation of internal and customer-facing services.

Another approach is to split out data and application layers, so data remains on dedicated infrastructure at all times, while applications with 'spiky' usage profiles are burst between private infrastructure and the public cloud as demand dictates.

Hybrid Cloud solution: Innovate faster using dummy data in the public cloud, while confidential production data remains on a tightly-controlled, single-tenant infrastructure.



# HYBRID HEROES: ROYAL NAVY

The British Royal Navy wanted to add an extra dimension to its website. There was a strong requirement for an increase in the use of rich media – including video, audio and complex presentations – which requires large volumes of server space and the capacity for rapid online delivery.

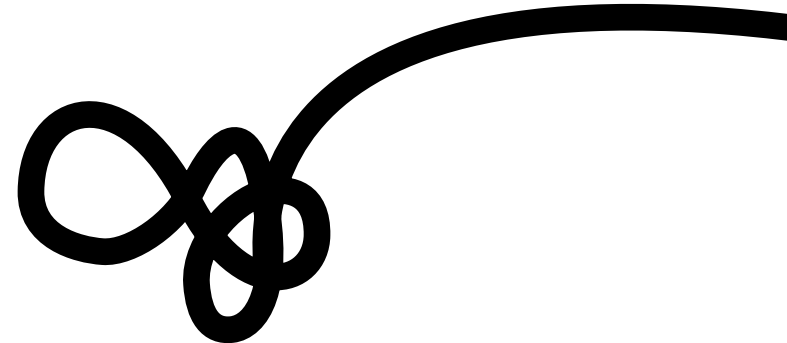
At the same time, the Navy was under pressure to make budget cuts under the Strategic Defence Review. Its web team looked at the possibilities of using a Cloud-based Content Delivery Network (CDN) as a particularly cost-effective solution to the problem of delivering rich media over the web.

Unlike traditional file storage solutions, there is nothing to buy and no upfront costs for cloud storage. You simply pay for the file storage space and outgoing bandwidth that you actually use. It had the potential for significant cost savings.

The Royal Navy website was already hosted in the MOD's Joint Server Farm project, a Private Cloud solution managed and supported by Rackspace Hosting. It looked to the experts at Rackspace to add a CDN into the environment and to support this critical addition to its website.

“Rackspace has provided us with a flagship website hosting environment using the latest cloud technology. The new CDN package is being reviewed by the MOD Joint Server Farm as well as the general audience, and is considered to be a blueprint for future developments.”

**Lieutenant Commander  
Graham West**, Royal Navy



# IN SUMMARY: IT'S ALL ABOUT BEST FIT

Hybrid Cloud is about taking advantage of the economic and performance benefits of the cloud in the way that's best each individual application and for your organisation as a whole.

## **And that's about finding the right balance between:**

**Agility:** How fast do we need to develop this new application or get this new service to market?

**Security:** Is everyone comfortable with this application/data being in the public cloud, or would some prefer we kept it close?

**Performance:** Will this app run well on a shared infrastructure, or does it need the whole stack to itself?

**Economics:** Is it going to be cheaper or more expensive to put this data or this workload into the public cloud? (*Back to the car hire analogy: own the base, rent the spike.*)

**Licensing:** Do the license terms of this application make it difficult, impossible or financially punitive to run it on a shared infrastructure in the cloud?

The beauty of the open cloud is that you can move workloads between cloud and dedicated servers as sense and budget dictate. So on a daily, weekly, monthly or yearly basis, you can review the organisation's needs in light of the above considerations, and make adjustments accordingly.

# POSTSCRIPT: DON'T GO IT ALONE

FOR MOST ORGANISATIONS, ONE OF THE BIG BARRIERS TO CLOUD ADOPTION IS LACK OF EXPERIENCE.

Some public cloud providers do nothing but provide the infrastructure, leaving customers to muddle through the logistics themselves. That's fine for developers working on skunkworks projects, but when you're talking about a potentially transformative change in IT strategy, it helps to have help (to put it mildly).

## **That's why at Rackspace, we take a completely different approach:**

Our Rackspace Advisory Services are on hand to discover, map, review and analyse your current infrastructure and recommend the Hybrid Cloud approach that will work best. Talk to us about our tailored [Hybrid Cloud workshops](#)

Our Fanatical Support operation is there for you at every single step of the way as you build out your Hybrid Cloud strategy.

Our hosting services and technologies are geared for maximum flexibility – so you can move workloads seamlessly between public cloud, private cloud and dedicated servers whenever you like.



# READY TO START YOUR HYBRID CLOUD JOURNEY?

WE'VE GOT LOTS OF RESOURCES TO HELP YOU ON YOUR WAY TO A SUCCESSFUL HYBRID CLOUD STRATEGY. HERE ARE JUST A FEW TO GET YOU STARTED:

[Why Hybrid Cloud is a must-have for the enterprise](#)

[Why Open and Hybrid work so well together](#)

**Case study:**

[Domino's Pizza cooks up hybrid strategy to support growth](#)

**Case study:**


[Royal Navy sails into the \(hybrid\) cloud](#)

**...or just give us a call**

Our Fanatical Support team is here to help with any questions you may have.

Call us anytime on:  
+44 (0)20 8712

**Or why not follow us:**

-  Twitter
-  Facebook
-  LinkedIn
-  Google+