



# The Datacentre Colocation Business Case

1ST EASY WHITE PAPER | JUNE 2009

Stephen Bell, Managing Director, 1st Easy Limited

## What is this document about?

This document introduces company IT Management, Directors and The Board to commercial colocation datacentre services and the benefits that can be realised from their deployment in comparison with privately owned and operated datacentres. It also includes a typical case study that can be used to compare with your own business.

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1st Easy Limited - "Your Internet Resource Partner"

[www.1stEasy.com](http://www.1stEasy.com) | [sales@1stEasy.com](mailto:sales@1stEasy.com) | 0808 222 2221

## What is Datacentre Colocation?

Colocation is the rental of space, power, Internet connectivity (also known as bandwidth or IP transit) and network support services within a large-scale, purpose built datacentre. At the smallest scale, space is sold in single server-sized mountings (known as U space), but is more typically provided in lockable quarter cabinets/racks (10U) and full cabinets (42U). The space is used to host client-owned and managed hardware.

### *Glossary of colocation related terms*

#### **Cabinet / rack**

Specially designed metal racking used to mount servers within a datacentre. Divided into *U-space*, and often used to denote the amount of space required for larger clients.

#### **IP transit / bandwidth / traffic**

A measure of the speed or volume of traffic that is supplied to a datacentre client. Often referred to in Mbps (Megabits per second) or Gb (Gigabytes) per month.

#### **SLA (Service Level Agreement)**

Typically associated with a percentage figure for the guaranteed level of service over one year (e.g. 100% power SLA indicates power availability without failure during an annual period). Pre-agreed monetary compensation can often be claimed if service falls short of the stated SLA.

#### **UPS (Uninterruptable Power Supply)**

The provision of emergency back-up battery power to ensuring ongoing power supply to equipment in the event of a mains power failure. UPS power is automatically activated whilst auxiliary power (such as a diesel generator) is made available.

#### **Resilient / redundant**

The provision of fault tolerant services, generally in the area of networks and power. For example, a resilient network will consist of at least two routes, so that if one fails, the second (backup) network will continue to service Internet traffic.

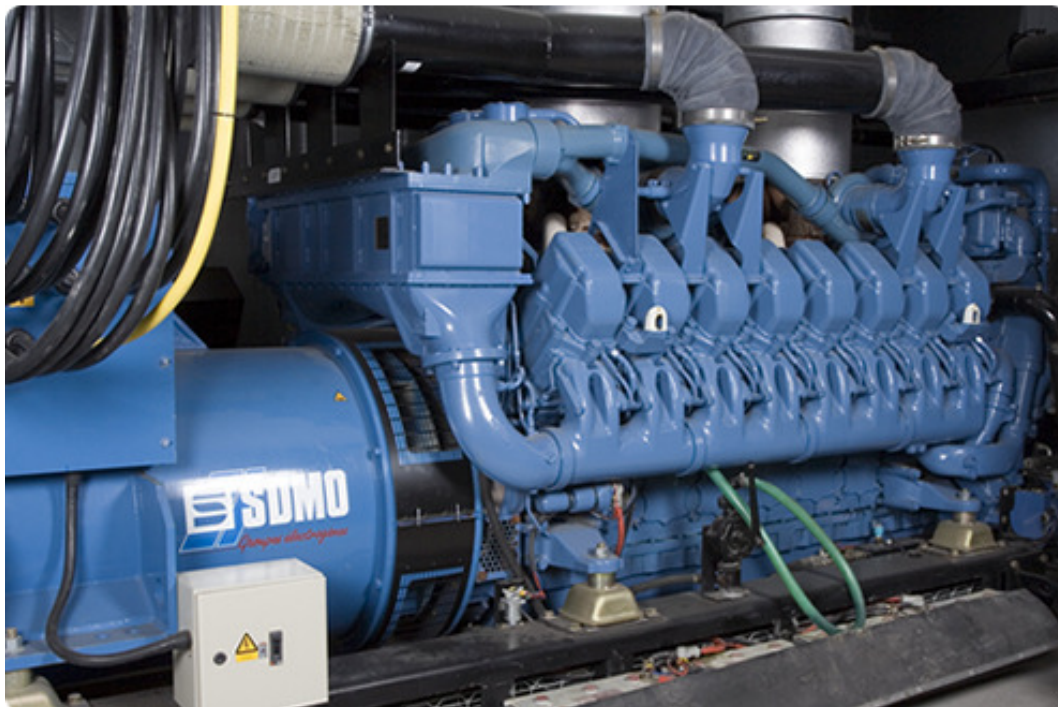
## What benefits could be realised from such services?

The multi-million pound investment and large scale (1000+ cabinet capacity) of modern commercial datacentres generally means that they are built to higher specifications than private in-house datacentres. The resulting economies of scale allow the many tenants of a datacentre to benefit from enhanced performance and efficiencies in key areas of datacentre design such as air conditioning, power availability, networking (resilience and delivery) and physical security.

### Power

A business-class datacentre will have multiple measures in place to ensure the constant availability of power to supply equipment:

- UPS (Uninterruptible Power Systems) allowing for short-term power failure without an impact on supply to equipment.
- On-site generators to provide supply where utility supplies are lost.



*A 2Mw diesel backup generator with direct feed from the National Grid*

## Network delivery

Colocation datacentres are extremely well networked, with huge volumes of IP transit arriving at them. One of the biggest savings – and sometimes justification alone for colocation – is in the area of networks and IP transit costs.

To illustrate this, the costs of delivering a hypothetical 10Mbps (Megabits per second) of bandwidth to a business in a small town, would involve approximate costs of £320,000 over five years (breakdown in Figure 1).

10Mbps transit connection: £17,000 pa	£85,000
Second 10Mbps resilient connection: 17,000 pa	£85,000
IT Networking Support Staff: £30,000 pa	£150,000
<b>Total 5 year cost of deploying 10Mbps IP transit</b>	<b>£320,000</b>

*Figure 1:* Deploying 10Mbps IP transit to a private datacentre

10Mbps transit connection: £4,800 pa	£24,000
Second 10Mbps resilient connection: included	£NA
IT Networking Support Staff: included	£NA
<b>Total 5 year cost of deploying 10Mbps IP transit</b>	<b>£24,000</b>

*Figure 2:* Deploying 10Mbps IP transit to a colocation datacentre

In contrast, the cost of contracting the same bandwidth requirement within a datacentre would typically be in the region of £4,800 per year, or £24,000 over five years: just 7.5% of the cost of deployment to a private datacentre.

Significantly in this scenario, the colocation vendor provides all the necessary resilience and support staff to keep this running 24/7/365 under high specification Service Level Agreements (SLAs, or measures of service guarantee).

## Network resilience and security

In the above example, the considerable investment that is required to deploy a 10Mbps network to a private datacentre does not include any provision to protect against a medium to severe network attack.

The most common type of attack is known as a Distributed Denial of Service (DDoS) attack, where a network is flooded with requests in an orchestrated operation. These attacks can often exceed 100Mbps, which would easily overwhelm a 10Mbps network, causing downtime for the duration of the attack.

The considerably larger network capabilities of a commercial datacentre (perhaps 10Gbps - Gigabits per second) means that they have the spare capacity to effectively absorb such attacks and in combination with anti DDoS systems, allow services to continue to the client unaffected.

## Support services

Every company knows that staffing is one of their main operational costs and that IT personnel in particular, are skilled staff that command higher than average salaries. In order to provide 24/7/365 operations, a company would need a team of several shift based IT workers, costing several £100,000s per year. However, this arrangement is poor in terms of efficiency: although staff members are required to be constantly available to respond to any issues, they are not generally used on a continuous basis.

Conversely, the same continuous levels of support can be provided at a commercial datacentre at a much cheaper rate, because their teams are servicing the client base of an entire datacentre, with a higher frequency of incidents.

## Datacentre security and access

Many companies that run their own datacentres struggle with the effective security of their facilities. Full manning coverage is expensive and deploying high physical security into the datacentre design, comes at a real cost. Without exception, a colocation datacentre should provide the following physical security features:

- 24/7/365 on-site security
- 24/7/365 access for authorised customer IT staff
- Perimeter security fencing
- CCTV monitoring throughout (now a PCI security compliance requirement for online data transactions)
- Key fob or other access



*External CCTV coverage*

## Multiple datacentre connectivity

An added benefit of colocation datacentres is the option at some to link to another such facility, enabling efficient data backup (replication across the two sites) as part of a disaster recovery (DR) strategy.

## Air conditioning and fire protection

Purpose-built commercial datacentres include features such as raised flooring to accommodate air conditioning systems that optimise the environment using so-called “hot and cold corridors”. In addition, specially designed fire detection equipment such as the VESDA™ (Very Early Smoke Detection Apparatus) gas deployment fire system minimise risk and safeguard against equipment damage should a fire break out.



*Banks of extractor fans pull warm air from the top of cabinets*

## When does commercial colocation become viable?

If you currently have your own datacentre with a capacity of less than 150 cabinets, or are investigating your DR strategy, it may be financially prudent to investigate using a commercial facility.

## Colocation Case Study

This example may help to put the above into a real world context.

### The Company

Has been developing its network based applications and online business over the last ten years. In order to support what has become a critical part of its operations, the company requires room for expansion, enhanced datacentre specification, and improved security.

To date, it has housed equipment (twelve cabinets) at its head office in a small glass house datacentre, managed by the IT department. The company has International operations and needs to support its staff throughout the world, on a 24/7/365 basis. As a result, the IT department has grown to a total of ten staff, with six having responsibilities over the datacentre's operations at a cost of £180,000 per year.

The datacentre continues to require specification enhancements to meet the increasing business demands, and a request to increase security levels around the building at a cost of £150,000 have been submitted by the IT Director.

Further to this, the datacentre periodically experiences power outages. With no backup power strategy in place, these outages have resulted in expensive down time for user applications and occasionally, data corruption due to unplanned shutdowns. The IT Director has submitted costs to use part of the car park to house a diesel generator, at a cost of £250,000. However, this has practical issues, as car park space is already stretched.

The Board has been made aware of the various outages over the last few years which have caused disruption to internal staff using web based applications, as well as loss of online business and reputation. The Board is also aware of the requests to spend on security and fixing the power outage situation.

It has therefore tasked the IT Director to look into more cost effective alternatives to the somewhat impractical in-house datacentre expenditures and to make the IT Department more efficient.

### The Solution

Although the IT Director was aware of datacentres, he had always considered that such facilities were only available within London; being based in the North West, travelling times had rendered their use impractical.

A search on Google, however, found that there were facilities available more locally. After visits to datacentres in Manchester, he found his requirements could be met at such facilities, whilst significant cost savings could be made:

12 cabinets with 10A of power	£130,000
10Mbps IP transit	£5,000
100 support incidents (24/7/365)	£10,000
<b>Total annual cost</b>	<b>£145,000</b>

*Figure 3:* Annual costs of migrating to a commercial datacentre

The IT Director presented his findings to The Board, proposing the use of the chosen datacentre facility, whilst at the same time, re-organising his support staff to a lower level of support coverage, utilising colocation datacentre staff instead, at a saving of £90,000 per annum.

He presented the fact that improved service quality and security at the much higher specification datacentre could be beneficial to the business, making it more compliant to security regulations and the overall exercise would cost £55,000 per year net, tax deductible as a service cost, whilst reducing capital expenditure on head office security and power protection upgrades by £400,000.

## About the author

*This article was written by Stephen Bell, Managing Director of 1st Easy Limited, as well as two other internet services companies in the North West of England. Stephen has 30 years experience in business and IT services delivery and has worked for leading companies such as Sun Microsystems, Silicon Graphics, Sequent and IBM during his career.*

*As a Director and owner of companies for the last ten years, he has focused on the delivery of advanced Internet based services to many companies, both large and small.*

### Contact details

[sbell@1steasy.com](mailto:sbell@1steasy.com)

0800 222 2221