



A Guide to choosing Data Centres fit for the Digital Economy

The Questions **YOUR** Business should be asking



INTRODUCTION

The Digital Economy never sleeps – neither must your IT

You're the owner or company director of a fast-growing business, or perhaps an IT professional or C-Level executive in a large enterprise organisation. You may, or may not, have direct responsibility for running your IT but either way, you'll appreciate that it's at the heart of your organisation: Paying the personnel, managing and monitoring suppliers, servicing customers and sales. And of course, keeping your web or e-commerce presence up and running 24/7/365.


But now, more than ever in today's hyperconnected always-on Digital Economy, non-stop IT systems availability is an absolute given – no excuses. So too is your company's ability to channel the disruptive power of IT to deliver real competitive advantage. It's a game-changer. Getting it right means more informed decision making, overhead and cost optimisation, improved productivity and faster time to market, a highly responsive customer service, and the agility to respond more quickly to unforeseen market opportunities.

On the other hand, if not rigorously managed, updated and maintained IT can quickly become inefficient and a potential weakness that your competitors, or worse still, hackers, can potentially exploit. If outages should occur, the costs in lost business opportunities, reputational impact and customer frustration can be significant. Even when downtime is relatively short, competitive edge is damaged from which some businesses never fully recover.

No matter what size or type your organisation, all of the above calls for a deeper understanding and shared responsibility at senior management level about the company's core systems and applications, where they physically reside and how they operate.

If they're in-house, consider whether this is still the most efficient, cost-effective and secure approach. If they're totally or partially outsourced to a colocation or cloud provider, know how much it costs, where they are located, what service level agreements are in place, and if there is sufficient capacity for meeting your future IT requirements. Above all, be satisfied your providers have adequate capacity and headroom, resilient infrastructure, and tried and tested disaster recovery processes.

'A Guide to choosing Data Centres fit for the Digital Economy' is intended to help you consider and formulate the most important questions when choosing your first, or next, data centre provider, and offers practical insight into why the right data centre is critical to keeping your business ahead.



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A changing data centre landscape

While the cloud, private and public, has a growing role in future planning, businesses face a changing world when it comes to deciding whether to invest in privately owned data centres or outsource to colocation operators. Data centres are increasingly about economies of scale, physical security, vast amounts of power supplied resiliently, and efficient operation.

For many businesses, faced with the headache of ever-decreasing IT planning windows and the escalating costs and complexity of designing, building and running their own data centres, total or partial outsourcing is a growing requirement. With the availability of purpose-built 'ready-to-go' facilities, lower-cost fibre communications and more sophisticated IT monitoring software it is now quite feasible to operate facilities remotely while still keeping close control of systems and data.

Whether renting space and infrastructure for a few racks in a shared hall or leasing a large custom-designed private data hall, the wide choice and flexibility available is compelling - all funded from operational expenditure preserving an organisation's capital for its core business.



Weighing up the costs - data centre ownership vs. outsourcing

On paper depreciating the build cost of a privately owned data centre over 15 or 20 years may appear to give a lower TCO than a comparable colocation solution. The reality is that it is either sized to cope for 10 years of growth, in which case it will be massively under-utilised for many years, or sized for just the immediate requirement in which case it will be too small to enjoy the economies of scale of a larger data centre.

Putting this into perspective, consider a self-build project including the power, cooling and associated infrastructure for supporting an initial 25 racks with additional capacity to take up to 80 racks. Let's assume a build cost of £2.5m depreciated over 10 years to £250K pa or a cost per rack of £3,125. On the face of it, this may well appear cheap compared to a colocation facility.

That is until adding the cost of capital, say an average of £100K pa, and equipment maintenance, perhaps another £50K pa, and of course rent & rates – £90K pa. There's also staffing and even assuming a bare minimum, £150K will be needed for salaries including all uplifts. The total is, therefore, £640K pa or £8,000 per rack for the 80 racks. Not such a good price after all.

But that's not all. Initially, it's not 80 racks but 25. Those 25 racks now work out at an average of over £25,600 pa each and even assuming the data centre will be full in a year or two to get the price per rack back down to the lower level, there is a fair chance it may be too small. If 85 racks are needed where will the extra 5 racks go? Building another 80 rack facility for a further £2.5m may well be unviable.

By comparison, housing the same number of initial and potential additional racks in a modern tier 3 UK colocation data centre will cost between £5000 and £10,000 per rack pa depending on location (with London/inner M25 locations being at the higher end of the scale). This includes space, power, cooling and associated infrastructure.

The above scenario shows the own-build option looks cheaper than colocation only if the cost of real estate and staff are ignored and full occupancy is assumed.

Larger data centres – over 250,000 sq ft - can further reduce the cost per rack by delivering even greater economies of scale. This is achieved by all data hall construction taking place within one building and the utilisation of a common facilities infrastructure (power supply, HVAC plant, fibre cross-connects, security).

The price differential raises the question whether it is still necessary to continue paying a premium for central London colocation facilities where real estate costs around £25 per sq ft, build costs can be as much as £10M per MW, and power connection anywhere between £5M and £15M, while the best case for outside London is at least half of these.

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Choosing fit for purpose data centre services

Not all facilities are the same. While third-party data centres may appear to be a commodity these days, the reality is very different. In part this is due to the way prospective buyers tend to focus on particular criteria, only to find down the line there is huge unconsidered nuance underpinning the quality of data centre services. It is not helped by the industry typically focussing on a select few criteria such as 'Tiering' which can be poor indicators of how well-positioned, invested and operated a particular site actually is.

How to differentiate

There are more differentiating factors than you might imagine. Obvious ones are size, power and levels of M&E redundancy. But a key emerging factor in the digital world is levels of connectedness; the best data centres are hyper-connected with a plethora of carrier and gateway options. The worst are isolated sheds with little connectivity. All of the above directly influence if and how far you can expand at the site in future.

Security is also a key area but varies enormously. It is a combination of physical barriers but includes too the operational regime and diligence of staff.

When it comes to location, it pays to carefully consider the environmental risk factors such as proximity to a flood plain, flight path, and terror threat level. Geopolitical factors will also have a huge influence on the 'what ifs' and contingencies at a data centre. Such factors may prove a step

too far when assessing international political and regulatory landscapes, cultural differences, security, latency, equipment installation/de-installation costs, proximity of IT service/repair organisations, travel time and costs in the event of unplanned downtime. Aside from data sovereignty requirements, the peace of mind from knowing that the UK remains one of Europe's safest destinations for data centres makes staying on home turf compelling.

Location is also going to impact on space and service pricing due to the cost of real estate and labour. With this, out of town locations that are free from the risks and constraints of metro locations are on the rise and often offer lower unit costs.

Consider too if data halls come pre-built or custom designed. In the former you have to accept how they've been fitted (inflexible) while with the latter they fit your precise requirements (customised). Is the operator focussed where it counts on excellence in what they do? What about the extent and quality of site facilities and services on offer and track-record of continuous investment in plant and service delivery?

Then there's the operational side of things. There's currently a huge variation in the thoroughness and regularity of relevant testing, planned preventative maintenance and reinvestment - from none at all through to excellent. Be sure to ascertain the actual service record at the site. Have there been failures and why?

Last but not least, the financials. Is the asset being squeezed for a return or approaching end of life on its plant/fitments? So check who owns the facility and the land...how does that legislate for what might happen in the future?

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Debunking myths

1 Colocation's just for the big guys – right?

A colocation data centre allows multiple companies to lease IT space, power and critical support facilities such as cooling and connectivity on a shared basis. If it's not necessary to maintain your own physical infrastructure, colocation gives you scalability, security, uptime, backups, and compliance.

Even for smaller companies moving servers off-site can make good business sense. Servers remain easily accessible via fast, secure remote access networks while the costs of maintaining the support infrastructure of an on-site IT room are eliminated. A further benefit, the necessary management overhead and potential headache of maintaining uptime day in day out along with security and disaster recovery planning is handed off to the data centre operator. You can devote your time and energy to running and building your business.

With more secure rack space, power, cooling and network connectivity available for lease nationwide, colocation is within the budget range of any size of business. It's no longer just for the bigger guys, with half or quarter racks available at competitive rates. If security and 100 % systems availability is essential, or if you're tight on server space, colocation is a sensible route.

2 Safe as houses - we're in the Cloud.

The convenience, security and elasticity of the cloud are well-proven. However, not all workloads will go into the cloud and many applications that can will need to be repurposed beforehand. This is why most companies typically use a combination of cloud, colocation and on-premise. Ideally, the latter would be far better off in the cloud or in a colo in the long run.

You may have your legacy and some cloud-based applications based on-premise or in a colo nearby which may offer more control, but remember those services delivered via the public cloud, perhaps as part of a mixed 'hybrid' cloud solution, are reliant on third-party data centres. But in the end, it will still be your company's reputation, productivity and profitability on the line if any part of the chain fails.

To maximise your cloud cover consider the data centre behind your cloud - not just the cloud company providing it. The major cloud service providers now ensure their strategic hosting data centres use cloud gateways for direct connection, delivering greater security and a faster, smoother experience for end-users.



Debunking myths

3 Location isn't an issue.

Data centre location can impact a colo or cloud provider's price to you and among others is influenced by the cost of real estate, labour, and power. London is significantly more expensive than out of town locations, so only use it if you have to.

Check where your colocation data centre(s) is located, who owns it and compare prices against similar facilities elsewhere. Take a tour and see for yourself if the proposed data centre is well out of harm's way from busy urban traffic, flight paths, flood plains, and large enough to scale as your needs grow.

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4 Power's just a commodity.

Knowing how well equipped your data centre is for powering the high-density racks required for your current and future IT requirements is essential. Even for general colocation, power per rack is now anything between 5 - 20kW while some Cloud and High Performance Computing (HPC) environments require 30, 40, 60 or even 100kW per rack. Achieving much higher power to space ratios and having sufficient power in reserve for forwards expansion are therefore major considerations. The London metro area is already severely strapped for power.

Check if the colocation facility concerned can provide all that extra power now – not just promise it for the future – and whether it charges a premium price for routing more power to your system. Ideally, for maximum reliability, the mains supply should come directly from the national grid via a local substation. A data centre with control over its local power distribution and diverse feeds will dramatically reduce the chances of outages caused by spikes and surges.



Debunking myths

5 Seen one, seen them all.

There isn't much in the way of silver linings should colocation or cloud services stop working. While you will have ensured comprehensive service level agreements (SLA) with your providers, these on their own cannot deliver the maximum cover. Request documentary evidence of uptime track-records and internationally recognised quality and operational certifications. Check the level of critical electrical infrastructure for fully duplicated power feeds with uninterruptable systems and autonomous power generation. And look for providers that have specialised, diverse connectivity solutions, including direct access to fibre.

Consider too the Disaster Recovery planning measures in place and the kind of fire monitoring and suppression systems used. The quality of back-up systems testing varies widely as well and should be done regularly instead of taking a 'wait and see' approach.

Ask to tour the facility and meet the on-site engineering personnel who actually manage the technical areas, capacity planning, server installation and perform such tasks as power cycling, visual inspections and cable replacements. In the end, the resilience and reliability of a data centre depend heavily on people; experts who are responsible for the ongoing servicing and maintenance of critical infrastructure and components, and know when, or when not, to step in if there's an emergency. Be suspicious of facilities reluctant to show you around.

6 Lower density racks save money.

Ensuring your data centre provider has designed their facility to accommodate high-density racks allows you to achieve the right balance between rack space and power requirements. Running fewer high-density racks than low density 2 – 4kW ones will yield a lower total cost of ownership. This is because of the power to space ratio combined with the lower overheads associated with rent and rates. Converged platforms also require fewer interconnects and ancillary items.

A large-scale facility with abundant power can support very high levels in a single rack footprint, while a number of small data centres limit the amount of power available to a single rack, making the customer take two rack footprints. Choose a facility that has the flexibility to supply a wide range of densities.

7 No problem, it's our data.

While data centre service providers are obligated to give your authorised personnel access to your servers, what if they, or a cloud provider hosting your data, should go into administration?

At the outset check, there's a robust legal agreement in place to ensure you have legal access to retrieving your data.



Advice: Colocation Procurement

Vantage's engineering and commercial team includes senior members with hands-on experience of not only data centre specification, design and build but also their procurement. The following is not an exhaustive list but highlights some of the more common problems and pitfalls experienced during the evaluation procurement process.

- 1 **All too often a facility is chosen based primarily on cost, only to find a problem arises which exposes where corners have been cut.**

A good way of evaluating price vs. quality is by putting the data centre cost in the context of the total IT project cost, and in the context of the value of data. Here the data centre is often a minor component in overall cost and yet can have a catastrophic influence on business when things go wrong – see Inverted Pyramid.

The Inverted Pyramid

IT infrastructure is like an inverted pyramid. At the bottom is the cheapest element, the data centre service. It is staggering to think that the cost of this per rack is only £20 per day or less. That £20 rack supports perhaps £50K to £100K of hardware and software (the next layer of the pyramid), which support multiple business applications that provide the business systems and processes which are fundamental to the efficient running of a business worth millions (the top level of the pyramid).

That's an awful lot of trust to place in a service costing £20 per day. But responsible operators with modern, well-designed and built Tier 3 infrastructures, properly maintained with ISO standards approved processes and highly trained staff will ensure that outages are vanishingly rare.



Advice: Colocation Procurement

- 2 Procuring to a rigid specification can be a problem. So too can procuring to business agendas instead of technical ones. It should not be about engineers wanting the closest facility for convenience.**

Be clear on what the facility has to do for you and the investment required to do it properly. Let the operator show you for themselves how they've set it up and how they run it as there are huge variations.

- 3 Avoid getting trapped with a provider offering limited forwards flexibility and available space and power.**

Ask to see and touch the space, plant and operations behind the scenes and judge for yourself when you go and see it.

- 4 Not establishing the service record and capacity at site is common.**

Thoroughly investigate any historical failures for yourself....this won't be in the operator's marketing material or sales puff. Ask for a straight written response as to long term history of service continuity and SLA conformance at the location.

- 5 Don't rely on an SLA alone to deliver sound forwards service. Look instead at how the critical plant has been invested, architected and operated.**

It's usually pretty clear to spot an operator offering big number SLAs without the excellence under the bonnet to deliver it. Meet the people and decide for yourself if they have the right attitude and will be good to work with... because you'll be working closely with them.

- 6 Critically important is to investigate the service history at each and every location.**

Where it's excellent, understand why. Where there have been problems understand why and see that the operator understands why. For critical metrics in any SLA, walk-through and evaluate each operator's level of focus, preparedness, experience and compliance on making sure that the metric concerned never fails.

- 7 Don't expect the operator to be able to do it all.**

It's often more important that a data centre sits in an ecosystem of expert suppliers and industry experts, leaving customers to work with other third parties at the site to deliver their projects. These types of data centres often have scale and excellent site facilities to conduct projects and attract technology integrators & networking providers, meaning all the bases are covered.

- 8 Don't forget the service wrap when it comes to management reporting on service, capacity, utilisation, and compliance in a transparent fashion.**

A good third-party operator should give you more control and insights to manage the service than doing it yourself. A responsive 'can do' and transparent attitude with lots of contacts to talk to goes a long way. Beware those that don't do this at all.





If you are interested in finding out more about the key role next-generation data centre services should be playing in your business, please contact us. Perhaps you are considering a move to your first — or next — colocation facility, or looking to consolidate an existing estate. We will be delighted to arrange an initial tour of our Cardiff campus.

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Located in the Cardiff Capital Region, Vantage CWL1 is a purpose-built carrier-neutral Tier 3 facility offering 1,450,000 sq. feet (gross internal area) of highly secure and cost-effective space housing up to 22,000 racks. These can be arranged into self-contained and colocation data halls of various sizes all with independent services, resilient power and cooling systems. Vantage's environmentally-friendly high-level technology infrastructure has been designed to meet and exceed the ever-increasing demand for more computing power. Among its many features are a high capacity 270 MVA power supply direct from the super grid and sourced from 100 per cent renewable energy; and a variety of on-site high-speed, low latency carrier interconnects.

