

10 Things to consider when selecting a Data Centre.

A guide for CTOs, IT Managers, Network Managers and anyone who uses Data Centres

By

NEXTCONNEX
Wholesale Data Centre & Internet Infrastructure

Public and private Data Centres are growing rapidly as companies put more and more storage and applications into dedicated facilities for security, availability and the benefits of virtualisation and cloud computing.

However IT Managers in Systems Integrators, Service Providers and Cloud Computing companies are faced with a huge choice of Data Centres (DCs) where they can locate their equipment.

Selecting the wrong DC can cost thousands in unnecessary charges, levels of reliability, poor performance and customer affecting down-time. Future-proofing is critical as Data Centre technical requirements are changing rapidly. Who would have thought 5 or ten years ago that a rack would regularly use 4kW or even up to 16kW? What will happen in the future as computing power becomes ever more concentrated? Will this be off-set by new technologies that require a fraction of the power?

This guide points you towards 10 key considerations; but the choice and trade-offs between location, power, reliability, network and cost are yours and our experience shows that almost every company makes different decisions.

One way to provide the ideal solution for each application is to outsource the colocation requirements to a single wholesale partner which provides colocation options in multiple data centres with a choice of all the key elements below and a wide range of connectivity options, all under a single contract with support tools that let you keep track of customers, facilities and bandwidth usage. In this way you can change your requirements over time, adapting to developments in technology and matching your solution to your customers' needs.

The following factors are not listed in any priority order, because you will have your own priorities once you have read them.

1. Location.

In our experience location is one of the top items on a customer's list when selecting a DC. Often this is because it wants the DC to be relatively close to its offices so engineers can travel to setup and maintain equipment. However there are many other location factors to consider:

- a. **Physical Threats.** This means flood, fire, aircraft flight paths etc. There are DCs next to petrol stations, built on flood plains and under the approach to airports, large and small. The risks may seem tiny but accidents have happened.
- b. **Access.** Can you get access to the site easily? Can you drive there with equipment or spares and is there parking? Or can you get there by tube or train?
- c. **Diversity and separation.** Is the DC far enough away from your other DCs to provide sufficient resilience?

2. Power.

As suggested in the opening comments, how much power will you need now and what will that be in 3-5 years? Can the DC's UPS and Generators support more than 1kW, 2kW etc. per rack? What about future upgrades from the grid? Are they possible? Will they be costly? Many inner London DCs suffer from London's acute power shortage which is why customers are looking beyond Docklands and the City. It is not just the amount of power that needs to be questioned:

- a. How is the power supplied to the DC? Uptime Institute type approvals suggest that high reliability requires two power feeds from two separate parts of the grid but is this really necessary if the DC has good N+1 or 2N generator backup and UPS systems?
- b. How many steps are there between the SuperGrid running at over 400,000 Volts and the DC? Each step down is a potential weak link. Sites outside London can often offer high levels of power and availability from electricity supplies built for industries such as steel that have declined.
- c. How much does extra power cost? Some sites that are limited in power, UPS or cooling insist that additional power requires paying for an additional footprint.

3. Network Connectivity.

Many DCs have been built with careful consideration of the location and power but with the belief that “the networks will come to us”. Unfortunately this is not always the case and network choice could be limited. This is not necessarily a problem, particularly if the DC operates its own “Open Access” network which provides any carrier with circuits across a truly diverse network connecting the building to key Internet Exchanges such as Telehouse. Key network factors to consider are:

- a. Can you connect to your chosen carrier and/or Internet Access provider?
- b. How flexible is the bandwidth available? Growth in demand for bandwidth averages 52% per annum so a need for 1Gb in 2012 will become 8Gb in 2017 and 32Gb in 2020. Can the site cope? And can it cope cost-effectively?
- c. Remember that the bandwidth you require to enable Machine-to-Machine traffic will be 10 to 20 times greater than the sum of all the access bandwidths. This ratio is required to enable fast responses from the machines accessing and processing data. You may want to select a different provider for DC to DC connectivity, one that specialises in high bandwidth circuits provided over Optical Waves for simplicity, low cost and reliability.
- d. If the DC is owned by a Carrier, do they charge you to bring in another Carrier or are they truly Carrier Neutral?
- e. If you are a larger service provider you may want to reduce internet access costs through peering (e.g. via LINX) with other providers. This requires certain locations or “LINX anywhere” style services and the savings may pay for a more costly location.

4. Security.

Building security is important and there are plenty of standards and physically impressive devices such as iris scanners and man traps. However the security *procedures* of the DC are more important to achieving and retaining security standards. If they are a bit lax and bend the rules or are careless when you are showing a potential customer around the site you could lose a large customer.

Does the DC follow procedures?

Do you need to be certified to a particular standard and what does this mean for your DC?

5. Future Proofing.

If the power and cooling requirements double, will your DC cope or will you be faced with a sub-standard DC for the remainder of your contract? If you make a large commitment that you will fill over time, future-proofing is more important than if you are placing small tranches of business with a Data Centre Infrastructure Provider giving a wide choice of facilities.

6. Flexibility.

Examine each of the critical services provided by the DC.

Can you increase power, cooling and bandwidth? If so; at what cost?

Can you easily add more rackspace and connect it cost-effectively to your existing racks? Are there economies of scale as your bandwidth needs increase from 100Mb to 1Gb to 10Gb?

Does the DC allow you to select your own racks or must they all be from the same supplier? You may want larger or smaller racks – has the site got the headroom for a 47U rack or is it 42U only? This affects your cost.

Can you spread a power commitment for, say 40kW over 10 or 15 racks flexibly or are you restricted to a committed level of power per rack?

7. On-site support.

Do you need the DC to be open and manned 24/7 or can you accept a “dark” DC if you can gain unescorted access? What happens if you need a server re-booted using “remote hands” or something more sophisticated using “smart hands”. Some DCs offer hardware maintenance with on-site engineers and spares, maybe as a by-product of their IT support services and this could be invaluable, particularly if you have a number of widely spread DCs.

- 8. Flexible growth.** If you rent a big hall there is always space available but it is empty and not earning revenue until it is full. If you want to start with a few racks and grow, then all racks may not all be in the same hall, or close together. An outsource partner has greater buying power and can often secure flexible deals with space reserved for future growth and its support tools and processes help you manage an estate spread over several sites. This is where an IaaS provider scores – infrastructure on demand, but even they have limits – do you know what they are?

9. **Future-Proof.** If you have not invested large sums in one or two locations you can source the newest and best facilities every time, making your customer proposition always up-to-date. If the customer wants cold aisle containment, low PUE, green power and Tier 4 reliability – you can offer it without expensive upgrades to existing real-estate.

10. **Customer Acquisition.** Analysts at Quocirca warned in May 2011 that [UK data centres must improve](#) if the country is to remain a financial powerhouse. It found that the majority of organisations are having trouble ensuring that existing data centre facilities meet the changing needs of their businesses. You can place your business at the top of the list of suppliers by being able to meet your customers' needs through the right Data Centre combined with the right network connections.

Summary

IT managers are driving down costs and creating products for customers that increasingly rely on equipment located in data centres. As the demand for DC space grows, IT managers face the decision to build their own facilities, rent infrastructure in an existing DC or outsource everything including equipment to an Infrastructure as a Service (IaaS) provider.

The choice of Data Centre is very important. Large costs are involved and it is time-consuming, costly and risky to move to a new Data Centre if your choice proves to be wrong.

Risk can be spread by working with a Data Centre Infrastructure provider that can offer a wide choice of facilities and simple tools to manage a diversified estate. This Virtual Data Centre can consist of two, three or more locations linked by a dedicated high bandwidth network functioning and managed as a single entity. As new requirements arise the IT manager can take advantage of lower cost sites with compromises in some areas or select the latest, best and more costly locations with greater future-proofing. Unfortunately you can't have everything and life is full of trade-offs.

Risk is minimised as at any point in time you only have a small proportion of your racks that are in older facilities where flexibility may be limited.

Customer acquisition is maximised by being able to match Data Centre services to the latest product, service or customer requirement. If you need a lot of computing power but it is not critical if it finishes today or tomorrow, you could select a relatively low cost site with lower reliability (as long as a shut down doesn't crash your machines). Highly critical, customer-facing

applications can be put in higher cost and more reliable facilities with bigger bandwidths and better connections.

There are major risks associated with capital expenditure in a dynamic, technical industry like data centres and building and owning a data centre is not for everyone.

Renting space in just one or two Data Centres means buying into the strategy of the Data Centre owners and having a limited portfolio of prices and technical specifications. Flexibility is limited and the DC specification may gradually become out-of-date with time.

Using an IaaS provider restricts the choice and flexibility of equipment and the ability to easily adapt to changing standards and customer demands.

Partnering with a data centre and internet infrastructure company leaves IT managers free to match specification and location to end-user demands and to build and operate their own hardware and applications. Varied locations and network connections are all accommodated under a single contract and SLA.

Richard Auld is Commercial Director of Next Connex Ltd. – a Data Centre and Internet Infrastructure company that helps Systems Integrators, Service Providers and IT companies to manage the physical infrastructure in the most efficient and flexible way.

©2012 Next Connex Ltd