Data centres: The linchpins of the new digital economy

Data centres are the unseen yet integral part of the digital infrastructure of today's global cities. The market in the specialist provision of data centres around the world is growing dramatically—and it shows no signs of slowing

Setting the stage for tomorrow's business

Data centres, with their inconspicuous buildings and nondescript locations, are some of the most expensive real estate assets on the planet. Companies are increasingly turning to specialist operators to manage these crucial assets to support their business needs and client demands, as **James Dodsworth** of global law firm White & Case explains

From the outside, they are anonymous low-rises on the unfashionable outskirts of major cities such as London, New York or Singapore. Apart from the lack of any corporate branding, their main distinction is the hefty perimeter fencing—a visual hint of the massive unseen security measures in place.

Despite their nondescript locations and uninspiring architecture, these buildings are some of the most expensive real estate on the planet. That's because the entire connected world economy depends on them.

Data centres support bank ATMs, mobile phone networks, stock exchanges and governments, not to mention the World Wide Web.

Where cloud meets the ground

Although futurologists once talked of cloud computing ushering in the 'death of distance', today's omnipresent information services still need racks of computing hardware to drive them. In that sense, the cloud is not really the cloud at all. There is a physical data centre, somewhere. In the modern digital age, major global cities cannot hope to function and compete without sophisticated infrastructure—airports, roads, public services—and data centres.

Critical factors for choosing a site for a data centre include access to reliable power (and lots of it), optical fibre networks and physical security. In some businesses, the maximum distance of a data centre from a decision maker is dictated by the laws of physics. For example, in a trading environment, where a nanosecond makes a difference, physical proximity becomes incredibly important.

Location matters

The jurisdiction in which a data centre lies can also be crucial. "The market is constantly getting additional regulation," says Stephen Taylor, director of EMEA acquisitions at Digital Realty, a global provider of data centres supporting more than 600 customers. "That has tended to grow demand in each of our core markets. If Germany is insisting that you need to be in Germany, you are going to put a data centre in Frankfurt rather than somewhere where prices are lower."

Adam Levine, chief commercial officer at DATA4 Group, a European owner, developer and operator of data centres, agrees. "In general people want their data close to where their HQ is," says Levine. As such the world's financial hubs in Europe, North America and Asia are principally where the world's major data centres are currently to be found.

Today, developing and operating data centres is a highly specialised business—as are the contracting arrangements surrounding them. The combination of high levels of capital expenditure and investment, storage and manipulation of business-critical data combined with the potential for serious consequences and losses should service levels fail, means that both operators and end users, together with their related financiers and investors, are acutely aware of the need for appropriate industry-centric support and advice aligned with tightly drawn and relevant contractual documentation.

$241bn

Estimated value of global cloud computing market in 2020, from $40.7bn in 2011

Source:
Forrester Research

90%

of the world's data has been generated in the past two years

Source:
PwC

100k

new tweets are sent every minute by Twitter users
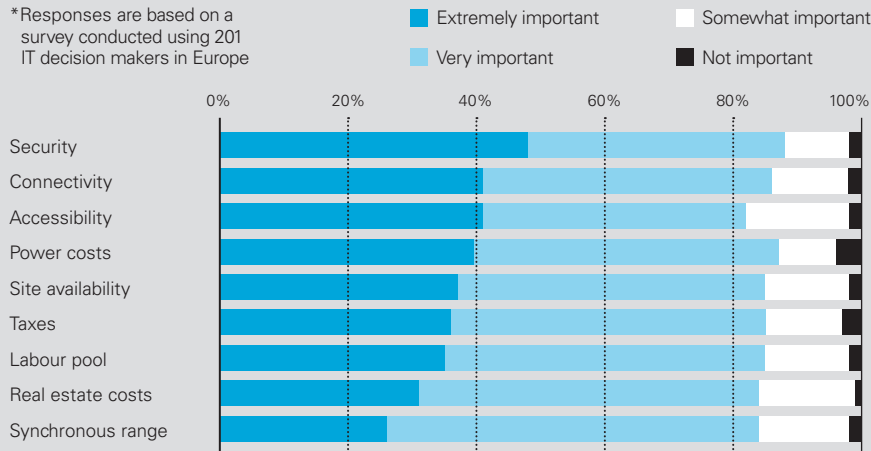
Source:
Intel

James Dodsworth, partner at White & Case and leader of the White & Case data centre practice, comments, "As businesses have become increasingly globalised and linked by the web, so the data centre industry has matched this pattern, becoming increasingly global in nature, whilst at the same time becoming more sophisticated in its general approach. This has led to demand for sophisticated support and advice and for the development of industry-centric solutions and related bespoke documentation. Utilising best practice from a number of arenas including real estate, outsourcing, M&A and IT/IP, we are developing a new distinct form of legal technology around this still-maturing industry sector."

Emerging regions

Bernard Geoghegan, managing director of EMEA and Asia Pacific for Digital Realty, agrees and adds, "A substantial proportion of the future growth of data centre facilities will be driven out of emerging markets simply because they have substantial populations, enthusiastically taking up new technology and enjoying new-found prosperity. This in turn creates a new demand for digital infrastructure. However, some of these emerging markets will create challenges for those participants who are used to dealing only in traditional North American and Western European markets, particularly as they relate to local law issues which may impact legal certainty and enforceability. We therefore increasingly value the support of advisers who can understand our global approach

Key factors influencing location choice when establishing a new data centre

*Responses are based on a survey conducted using 201 IT decision makers in Europe

Legend:
- Extremely important (dark blue)
- Very important (light blue)
- Somewhat important (white)
- Not important (black)

Categories (top to bottom): Security, Connectivity, Accessibility, Power costs, Site availability, Taxes, Labour pool, Real estate costs, Synchronous range

Axis: 0% 20% 40% 60% 80% 100%

Source: Digital Realty, Europe Campos survey 2013

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and industry-centric issues whilst guiding us in those new international markets where we wish to expand and drive our business forward."

The market in the specialist provision of data centres, fuelled by our insatiable appetite for services that store and manipulate data, is growing strongly—in double figures in most parts of the world. Benchmarking research from real estate services and investment firm CBRE has reported the strongest growth in six years for European data centres. The upturn has "prompted a revision to operator expansion strategy with the release of new space being accelerated," CBRE notes. And the changing way consumers use and request data services is also driving demand. The "automation of provisioning" is part of what is driving cloud service providers' growth: in other words, the ability for customers to buy a collection of services on demand, such as, video streaming services.

> **Fuelled by our insatiable appetite for services that store and manipulate data, the market in the specialist provision of data centres is growing in double figures in most parts of the world**

Only a few years ago these sorts of services did not exist to the general consumer, but now the demand is so great that substantial new data centre capacity is required to meet the cloud service providers' growth. In places such as Africa, where there is limited fixed traditional infrastructure, digital technology, particularly through mobile phone networks, has driven new e-commerce and helped accelerate economic growth.

Critical fault lines

Despite the attractive returns, the sector is not an easy one to penetrate. "Just a handful of key players do it globally on any meaningful scale," says Taylor. One barrier to entry is the high up-front capital cost required. The quality and integrity of legal title to the underlying real estate so as to avoid third party interruption, the related zoning and supporting infrastructure development complications, coupled with the specialised engineering challenges, all add to the cost. The other barrier is having sufficient credibility for customers to trust the operation of business-critical infrastructure to them. A proven track record goes some way to convincing businesses to "outsource" operations responsibility to a third party but certain end users, including financial institutions, will still need to be mindful of their regulators' requirements and ensure that their own contractual rights and remedies are aligned with these to avoid issues.

More than anything else, a data centre customer is looking for reliability. For obvious reasons, locations have to avoid flight paths and flood zones. There also needs to be robust redundancy solutions built into the engineering of the facility to deliver 24/7 operational integrity. A somewhat less obvious requirement is for massive amounts of electricity: a data centre might draw 30 megawatts (MW) of power (enough in itself to power a small residential town). The power is needed not so much to run the racks of computer servers but to keep them cool—hence the apparent attraction of Arctic locations for data centres—although as ever the lack of connectivity to international fibre routes, the requirements of industry regulators and the physical distance from corporate centres are a counterbalance.

Digital revolution

With tens of millions of people from emerging markets joining the global digital market every year, the demand to store, manipulate and access data services is growing dramatically. But as Rob Bath, vice president of engineering at Digital Realty, explains, the next stage of the sector's evolution could be even more dramatic. He comments, "Currently there is a person behind every digital device, whether that be a smartphone, a PC or other similar instrument. Soon, though, we will start to see a shift towards machines talking to each other and this then decouples content volume and demand away from being population-dependent and scales up what is possible (and required) quite dramatically."

This is perhaps one of the reasons why analysts get so excited about the prospects for this sector. As a number of commentators have been moved to say, we are witnessing a global digital revolution which is at least comparable to that of the industrial revolution. This has and will continue to have a profound impact on all our lives and businesses.

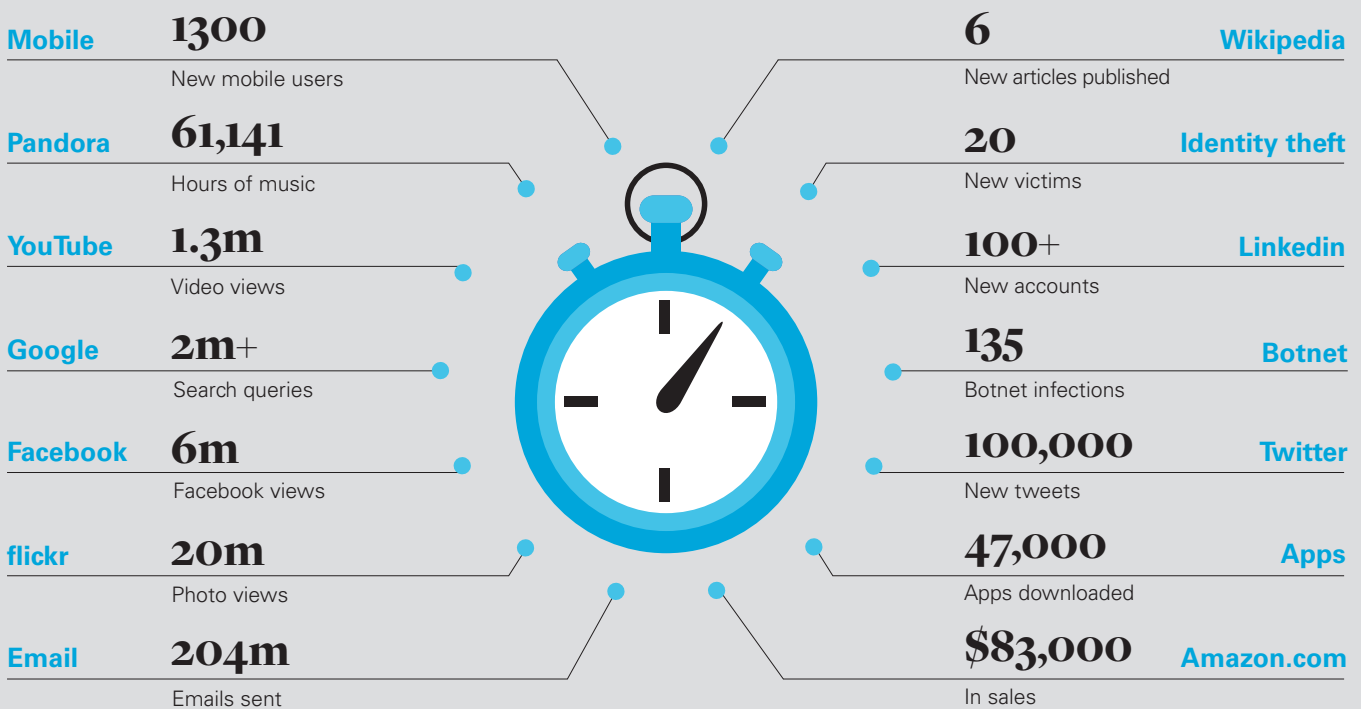---

Watch Video: Data centres— trends and opportunities

James Dodsworth, partner at White & Case, Martin Carroll, Director of CBRE Data Centres, and Adam Levine discuss current trends and investment opportunities in the data centres industry.

Driven by data: How online traffic is powering demand

Users' insatiable appetite for data-rich Internet services, coupled with plummeting computing costs, will fuel data centre demand in coming years
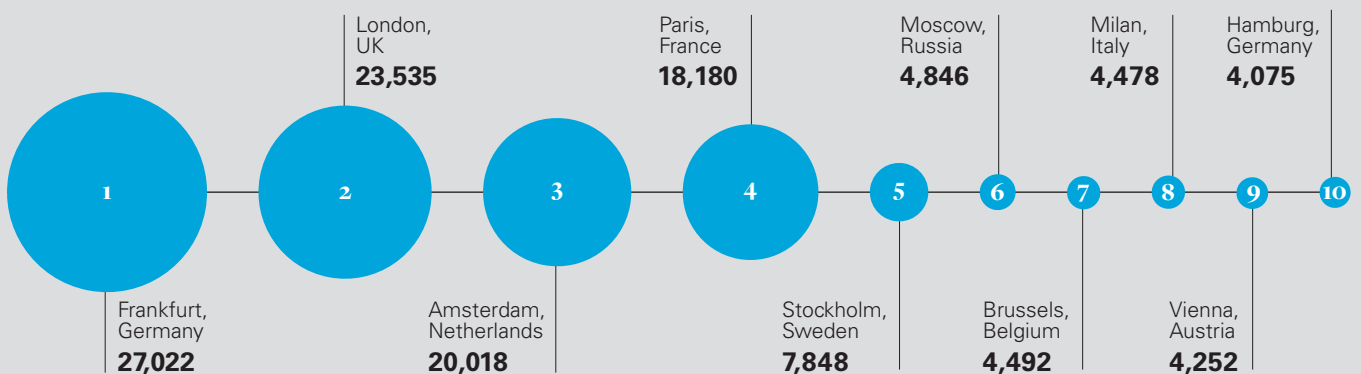
What happens in an Internet minute?

Mobile	**1300**	New mobile users
Pandora	**61,141**	Hours of music
YouTube	**1.3m**	Video views
Google	**2m+**	Search queries
Facebook	**6m**	Facebook views
flickr	**20m**	Photo views
Email	**204m**	Emails sent

6	New articles published	**Wikipedia**
20	New victims	**Identity theft**
100+	New accounts	**Linkedin**
135	Botnet infections	**Botnet**
100,000	New tweets	**Twitter**
47,000	Apps downloaded	**Apps**
$83,000	In sales	**Amazon.com**

Source: Intel

Speed test: Europe's leading hubs for high–speed networks (Gbps)

*Bandwidth in 2014

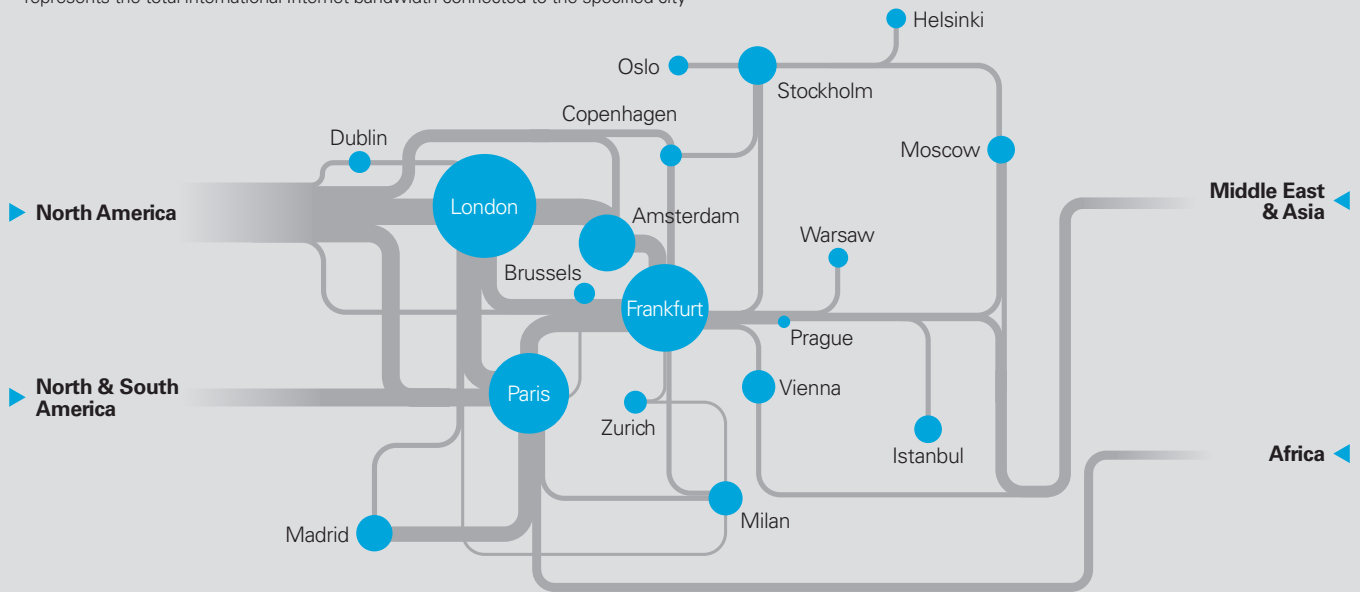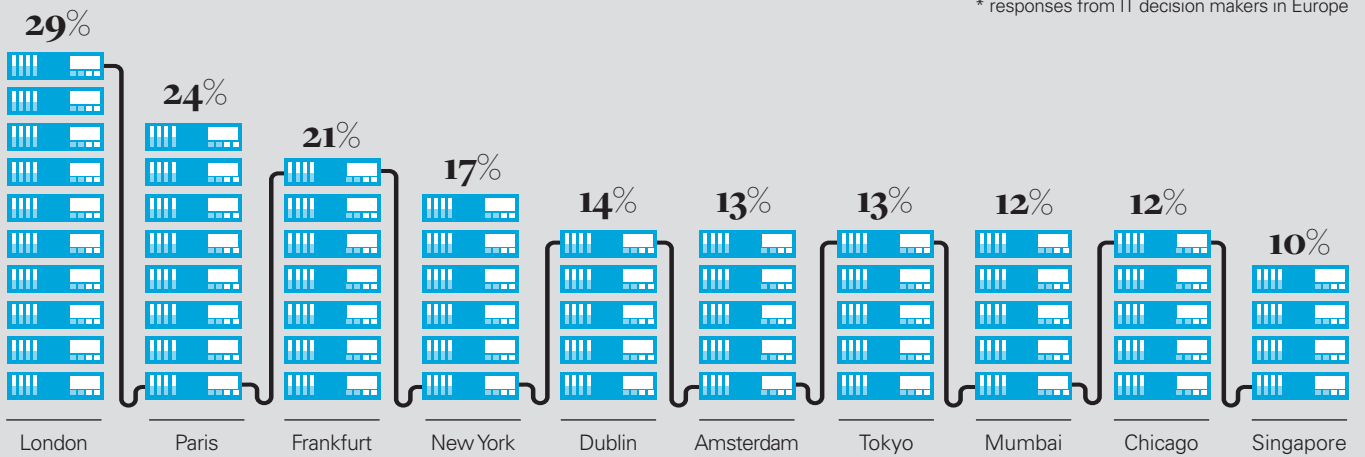| Rank	City	Gbps
1	Frankfurt, Germany	27,022
2	London, UK	23,535
3	Amsterdam, Netherlands	20,018
4	Paris, France	18,180
5	Stockholm, Sweden	7,848
6	Moscow, Russia	4,846
7	Brussels, Belgium	4,492
8	Milan, Italy	4,478
9	Vienna, Austria	4,252
10	Hamburg, Germany	4,075

Source: *TeleGeography 2014*

Plugged in: major European destinations for international Internet traffic

* Thicker lines indicate greater bandwidth capacity and the size of each circle
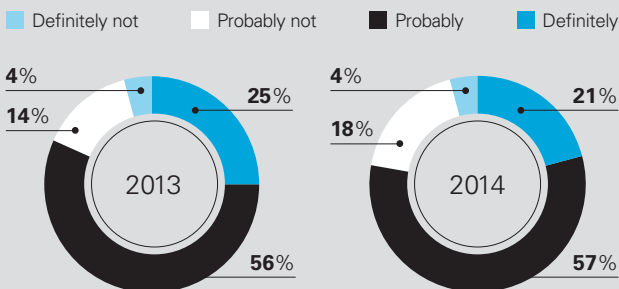 represents the total international Internet bandwidth connected to the specified city

Top cities to locate a new data centre

* responses from IT decision makers in Europe

London	Paris	Frankfurt	New York	Dublin	Amsterdam	Tokyo	Mumbai	Chicago	Singapore
29%	24%	21%	17%	14%	13%	13%	12%	12%	10%

Company likelihood to expand existing data centres

* responses from IT decision makers in Europe

- Definitely not
- Probably not
- Probably
- Definitely

2013
- 4%
- 14%
- 25%
- 56%

2014
- 4%
- 18%
- 21%
- 57%

Top countries to locate a new data centre

* responses from IT decision makers in Europe

United Kingdom	37%
France	29%
Germany	24%
United States	20%
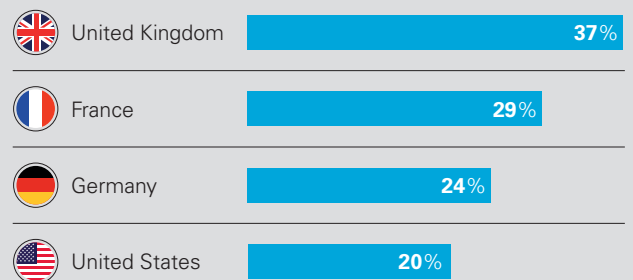
WHITE & CASE

James Dodsworth
Partner, London
T: + 44 20 7532 2101
jdodsworth@whitecase.com

whitecase.com