

# RESEARCH PAPER

## Making the right connections

The importance of looking beyond  
bandwidth in the delivery of  
cloud connectivity

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## Executive summary

Cloud computing is fast moving to the top of the IT agenda, with companies across the board looking to migrate applications away from simple in-house datacentres to a mix of platforms including both private and public cloud services. When it comes to planning those migrations, however, the emphasis tends to be on the cloud technology with scant attention paid to the connectivity side of the equation.

The cloud can be delivered in many formats, but in the majority of cases applications will be remote from the customers, partners and users who need to access them. That makes wide area network (WAN) connectivity a critical part of the solution and companies need to consider the consequences of poor performance or even connectivity failure on their business, customers and users.

Unfortunately connectivity services are not all the same making it important to look at more than mere headline bandwidth figures. Indeed simply buying bandwidth while relying on basic ISP broadband services may be a false economy. Instead companies should seek out business-grade services such as leased lines, IP VPN, Ethernet, fibre optic broadband and other next generation network services to connect offices and mobile workers with the applications and data they need to do their work.

Equally it is important to work with service providers who understand the needs of business and the demands they place on their connectivity services. Companies should choose partners prepared to do more than simply deliver vanilla services and hide behind a basic service level agreement. Rather that they should choose providers able to tailor services designed specifically to meet business needs with proactive management and direct access to expert, friendly and local support when required.

For many, too, the ability to host cloud-based services AND deliver connectivity will be important, as will the location of both the datacentres involved and the staff servicing them.

Questions relating to bandwidth, latency and security still need to be asked, but equally crucial are those relating to quality and service levels as these can differ significantly. In this *Computing* white paper, therefore, we look at, not just the technological pain points experienced by buyers of cloud connectivity services, but the quality and service related issues they need to investigate when making purchase decisions.

In just a few short years, cloud computing has gone from an experimental concept only to be considered by those comfortable at the leading edge of technology, to an increasingly acceptable adjunct and possible alternative to the traditional in-house datacentre.

This rapid evolution is partly down to a growing understanding of what cloud computing is all about and an appreciation of the cost savings to be had from its use, but also to a rapid growth in services designed specifically to meet the needs of businesses across a wide range of industries. As a result cloud computing is rapidly moving up the IT agenda with companies large and small increasingly prepared to include public and private cloud platforms in their deliberations, both when looking to deploy new applications and upgrade existing systems.

Unfortunately, whether considering a new cloud deployment or the migration of current applications the emphasis tends to be on the cloud computing services themselves and the way they work. Concentrating, for example, on the computing infrastructure required; the way in which applications are configured and managed; the scalability and availability of services and, of course, at areas such as security, storage and regulatory compliance.

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Far less attention is given to the connectivity required to support cloud-based applications which, as highlighted in a recent online survey of more than 100 *Computing* readers, is just as important when it comes to getting the cloud computing equation right.

## The cloud *status quo*

Respondents to the *Computing* survey represent a broad mix of organisations, including just over a third (38%) from small businesses with up to 500 employees. The rest, meanwhile, are from larger enterprises, including 36 per cent from companies with 5,000 employees or more, with the respondents selected to insure they were all involved in planning, deploying and managing IT infrastructures either in an operational role or higher up the chain of command to senior, board level, management.

Providing a clear snapshot of what companies of all sizes and makeup are doing with regard to cloud computing in the UK, the *Computing* survey shows how quickly the initial caution of just a couple of years ago appears to be evaporating, even in traditionally conservative corporates with large infrastructure investments to consider.

Barely more than a quarter (26%) still to have no plans to use cloud computing, while the majority are to be found either evaluating the technologies involved (28%), piloting a cloud infrastructure, busy migrating applications or running and managing systems in the cloud already (Fig. 1, see page 5).

Private cloud deployments are leading the charge here with 12 per cent of respondents saying they had gone as far as to migrate production systems to a private infrastructure. That said, private cloud solutions are far from universal with hybrid approaches, involving a mix of public and private cloud services together with conventional in-house datacentre systems, gaining a great deal of momentum. A finding more confirmed by other *Computing* surveys which show hybrid infrastructures fast becoming the preferred solution.

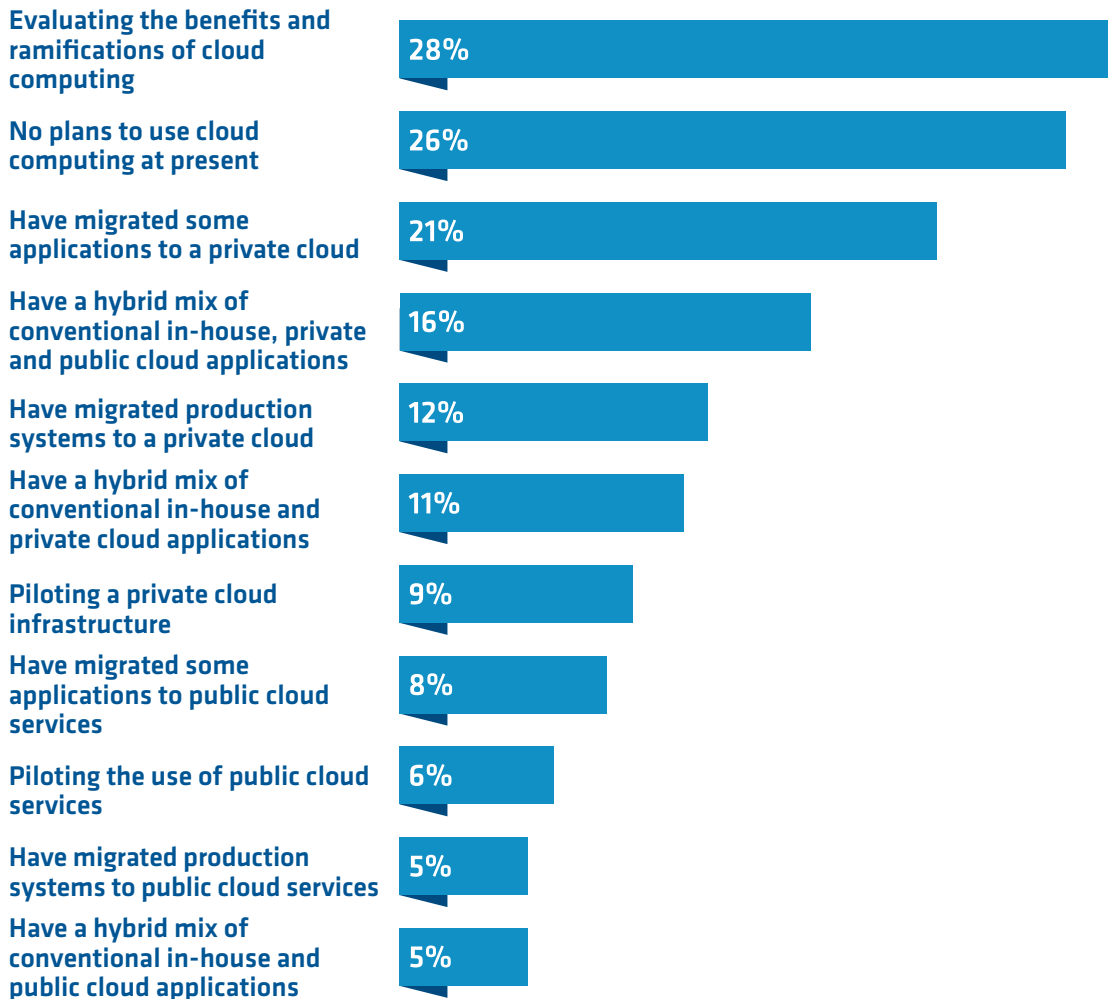
One thing all cloud platforms (and datacentres for that matter) have in common, however, is the need for connectivity, whether hosting applications in-house, in a co-location facility or using public/private cloud services to do the job. Regardless of platform, business critical systems need to be connected to each other, to their storage and other essential resources and, of course, to users of those systems who, likely as not, will be remote, calling for WAN as well as local networking links. Moreover, that connectivity needs to be resilient, secure and scalable to cope with not just immediate peaks and troughs in demand but long term system growth well into the future.

## Connectivity for business

Making sure that local network connectivity meets required standards is relatively straightforward. After all there are lots of switches that can be employed capable of delivering highly scalable levels of bandwidth, plus plenty of high availability options, plus technologies to prioritise traffic flows to meet quality of service targets.

Doing the same on the WAN, however, is nowhere near as easy. Few companies will have their own private WAN infrastructure, leaving the majority dependent on third party connectivity providers and the technologies and services they have to offer, either across private networks or the public Internet.

**Fig. 1 : Which of the following statements best describes the current state of play when it comes to the use of cloud computing in your organisation?**

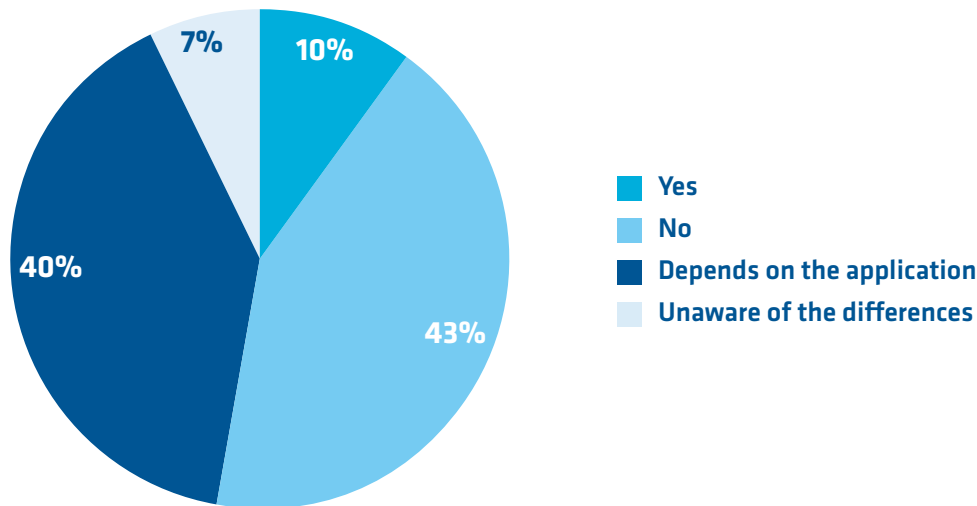


\*Respondents could select multiple answers.

Choosing the right kind of service is the first problem to be resolved and a common fallacy here is to assume all connectivity services to be the same and broadband services offered to consumers equally applicable in the business arena. Indeed, when asked if they had ever considered cheaper and potentially, less reliable, broadband connections over more expensive, guaranteed bandwidth services aimed at business use, 10 per cent of those questioned said they had (Fig. 2).

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**Fig. 2 : When deploying connectivity to hosted business applications, do you ever consider purchasing cheaper but less reliable broadband connections instead of more expensive, guaranteed bandwidth alternatives?**



A further 40 per cent said that they might choose a consumer-grade service dependent on the application involved. And that leads to the conclusion that many more will have looked at such services and a good number gone further and employed them in earnest in some form or other, even in larger enterprises.

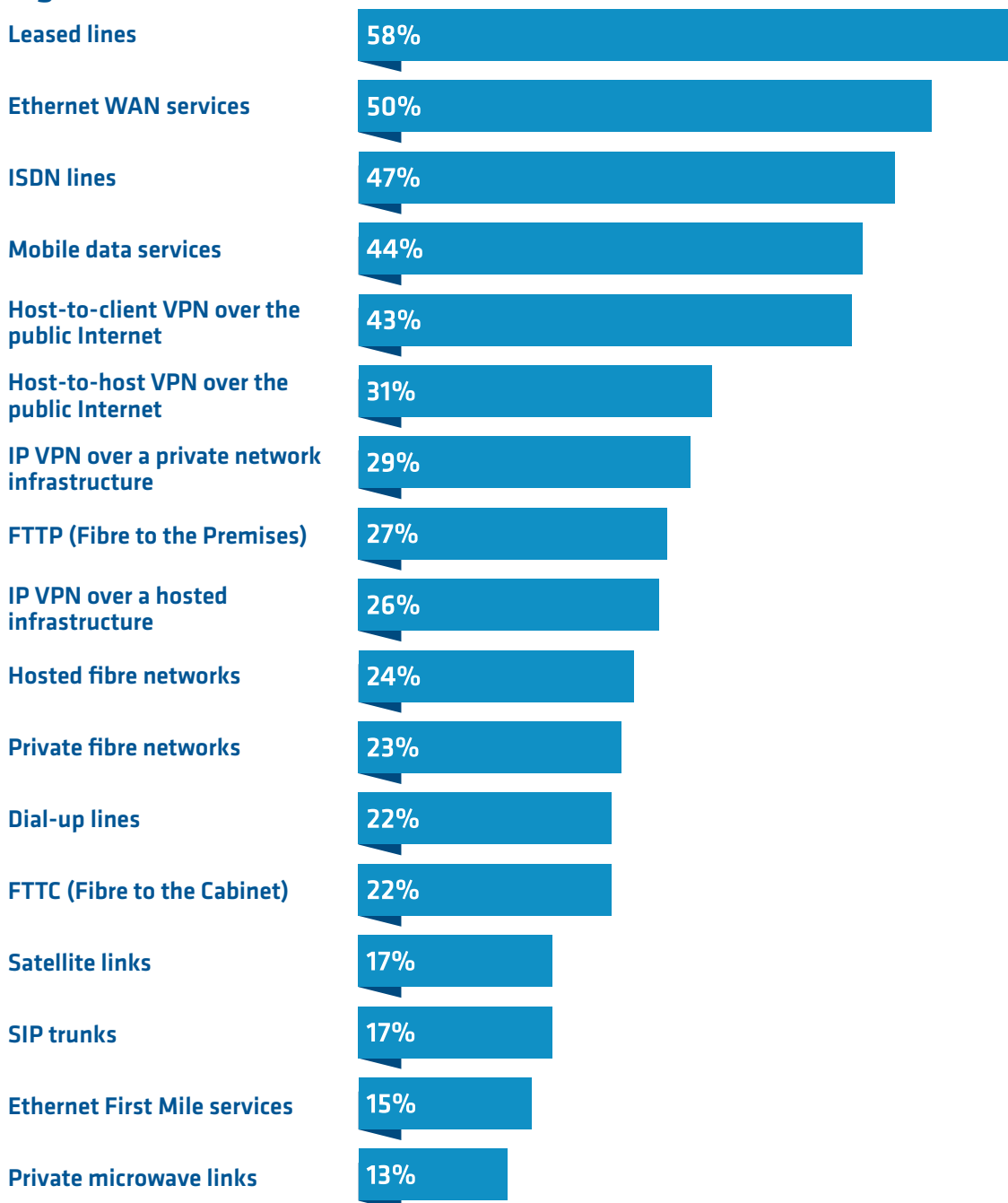
Despite the cost advantages, however, reliance on consumer-grade broadband services will almost certainly prove to be a false economy. Not least because such services rarely come with even basic service level guarantees which means having to take additional precautions, such as buying multiple connections, to deliver acceptable levels of performance and availability. More than that, the majority of consumer services are contended with bandwidth shared across multiple users and worse still, will often be throttled at periods of peak demand.

The overall result is huge variability when it comes to the bandwidth and latency of consumer-grade services and companies need to consider the potential impact of that variability, or possibly even complete loss of service, on their business, their customers and users. It is likely rarely, if ever, to be considered an acceptable risk.

## Connectivity options

On the plus side, when asked specifically about the use of other connectivity services better suited to business applications, respondents to the *Computing* survey showed a healthy awareness and use of many of the most common alternatives, as shown in Fig. 3 below.

**Fig. 3 : Which of the following WAN technologies do you use in your organisation?**



\*Respondents could select multiple answers.

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Top of the list here is that old standby the leased line, which despite its relatively high cost compared to more modern technologies is still in use with over half (58%) of companies surveyed. That, though, was closely followed by almost as many (50%) who had opted for more up to date Ethernet WAN services, typically delivered over a private infrastructure, for at least some of their connectivity needs.

Interestingly ISDN and even dial-up lines are also still in widespread use. Both, however, are beaten in the popularity stakes by the use of VPN services, either over the public Internet or private infrastructures (chiefly MPLS networks) and used to both link sites together and support remote user connectivity.

Unsurprisingly, mobile data services are also gaining in popularity. Fibre, on the other hand, appears quite low down on the list, but that may be more a factor of availability rather than suitability and the numbers using such services will, undoubtedly, grow as FTTC (Fibre To The Cabinet) and FTTP (Fibre To The Premises) services become more widely available. Moreover, as fibre optic broadband services targeted at business spread, this affordable and fast technology may well come to dominate the connectivity marketplace.

## The provider and the service

The widespread use of business-class connectivity services demonstrated by the responses in Fig. 3 is very encouraging, indicating awareness of the need to provision more than just maximum bandwidth at minimum cost. Unfortunately just as all connectivity services are not the same neither are the providers of those services. As such companies need to take great care and time when choosing who they do business with, not least because problems with connectivity providers and their services are far from uncommon.

Fortunately catastrophic loss of connectivity is rare, but intermittent outages had been experienced by some 41 per cent of survey respondents (Fig. 4, see page 9) with a quarter (25%) highlighting poor performance as another common problem with their connectivity services.

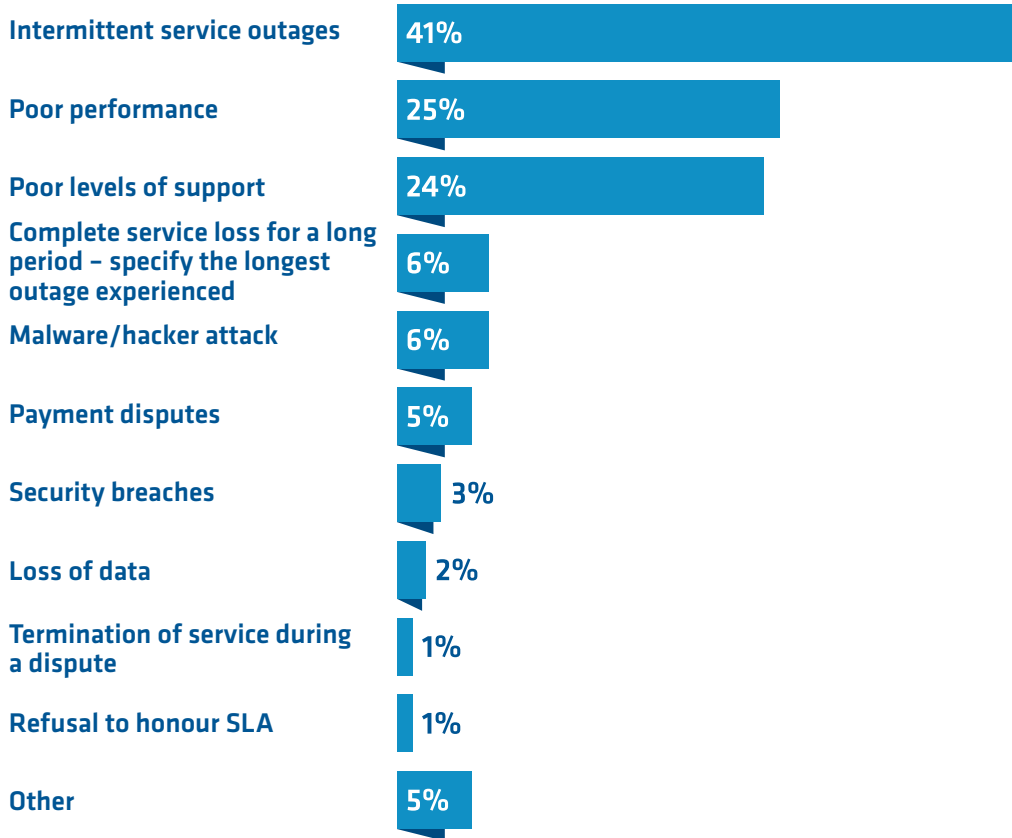
Disturbingly, almost as many (24%) pointed to poor levels of support as a real issue, indicating the need for due diligence when it comes to evaluating providers, the quality of the advice and the level of support they can provide to go with their connectivity services.

There is a real need here to choose providers who not only offer business-class technology properly attuned to the needs of mission-critical applications, but vendors who understand the pressures customers face managing those applications on a day to day basis. In particular, providers are needed who recognise the importance of less tangible deliverables such as advice on what connectivity services to use plus, once in use, proactive monitoring of the services they provide, backed up by direct access to expert, friendly and local support if and when things go wrong.

The good news is that most buyers know a lot of this already. Indeed a glance at the results in Fig. 5 (see page 9) shows that the importance of having services tailored to business use is well recognised when choosing a cloud connectivity service provider. So, too, does the need to consider the reputation of the vendors themselves, highlighting a desire to work with companies who can show that they are willing to work with customers rather than simply hide behind complex SLA promises.



**Fig. 4 : Which of the following issues have you experienced with your WAN connectivity services and/or service provider?**



**Fig. 5 : When choosing a cloud connectivity service provider rank the following attributes in order of importance to you and your business (1 = most important, 8 = least important)**

1	Price
2	Security
3	Relevance of services to your applications
4	Service level guarantees
5	Length of contract
6	Previous relationship with provider
7	Ability to cancel the contract early
8	Penalties for non-compliance with SLA

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Both of these considerations, however, were placed below price as the main concern when choosing a connectivity service provider, although this is far from a surprise, especially in the current economic climate. Thinking strategically, however, organisations should be doing more to assess the risk to their business of poor quality connectivity and not just thinking about price.

Other results, however, are less understandable with factors, such as local presence and support, for example, appearing to be given far too little weight when it comes to choosing an organisation to do business with. Similarly, only a minority of companies said they went out of their way to look for recommendations from existing customers or ask for associated case studies when making their deliberations.

All of which has to be of concern, especially against a background of continued consolidation and associated cost-cutting in the connectivity services market. The end result of such market changes is reduced competition and an increasing need to deal with large organisations which, almost inevitably, turn out to be less sensitive and responsive to individual customer needs.

## All in one advantages

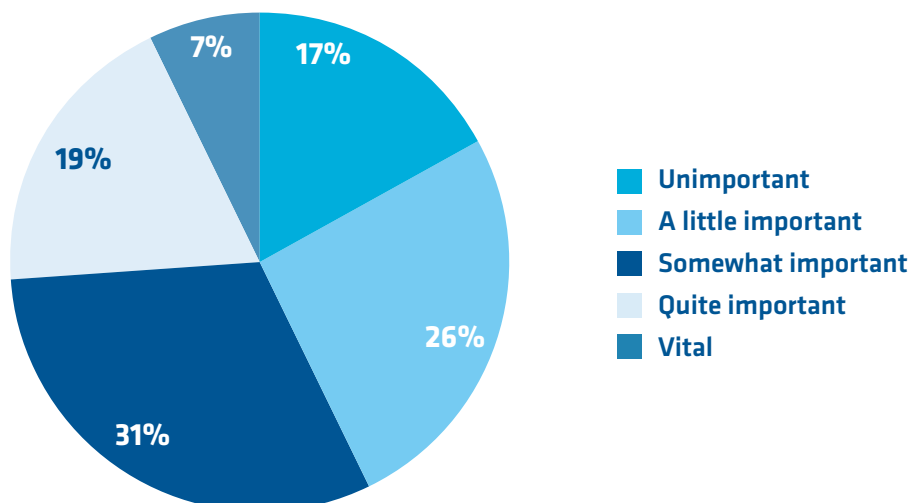
Market consolidation, however, is not always bad news and one growing and welcome trend is for vendors of cloud computing services to offer connectivity to go with their cloud platforms. Likewise it is becoming commonplace for carriers and smaller connectivity providers to also provide cloud hosting.

There are numerous benefits to be had from these more synergistic approaches, starting with economies of scale to, hopefully, help keep those all-important prices as low as possible. Added to which there are technological and security advantages to be had when WAN connectivity is delivered directly into a datacentre and managed by the same provider.

More than that, it is logical to assume that vendors of combined hosting and connectivity services will be experts when it comes to knowing what combinations work best together, making them best placed to proffer help and advice to those who need it.

This conclusion seems to be in accord with what customers think, as shown in Fig. 6 where survey respondents were asked how important the ability to deliver both hosting and connectivity would be when evaluating service providers for cloud migration projects.

**Fig. 6 : When evaluating service providers how important would the ability to deliver both hosting and connectivity be in your deliberations?**



An overwhelming majority thought the availability of combined hosting and connectivity services important at least to some degree, with 50 per cent scoring it “somewhat” or “quite” important. A further seven per cent even saw it as vital.

Vendors able to offer these combined services will, clearly, be more attractive to customers looking to take advantage of the cloud computing revolution, but that is not all that potential customers should look for. As discussed above there are lots of other factors to consider including competent, friendly and timely support from a provider that you can work with and trust to deliver the performance, security and availability your business-critical systems need – no matter what mix of platforms you choose to host them on.

## Conclusion

There can be no denying the growing popularity of cloud computing, with companies of all sizes looking to either migrate applications out of the datacentre or implement hybrid solutions involving private and public cloud services somewhere in the mix of infrastructure platforms.

Whatever the use of cloud computing, however, companies ignore the need for accompanying secure, reliable and scalable connectivity services at their own risk. They should look especially for business rather than consumer-grade services and investigate the growing number of alternatives to the traditional leased line such as Ethernet WAN, IP VPN and, increasingly, business-class fibre optic broadband services, able to deliver the performance, security and availability their applications need at affordable prices.

Buyers should also beware when choosing a connectivity service provider and look beyond the technologies they offer and the prices charged. More specifically, before even negotiating contracts, buyers should investigate less tangible factors such as the kind of advice and support providers offer, whether that support is local and what existing customers think of the service and support they actually get.

Additional benefits are also to be had by choosing providers able to deliver both connectivity and cloud hosting services, making it worth looking for this capability alongside others when deciding on a provider to trust with your business-critical applications.

## About the sponsor, Zen Internet

Zen Internet's data, voice and hosting services give UK businesses the capabilities they need to transact, communicate, collaborate and pursue their operational and commercial goals with confidence.

Zen believes that it is uniquely equipped to help businesses of any size make the most of new technology opportunities, providing the application delivery infrastructure businesses need to compete in today's highly connected world. No matter what size your business is you can 'get connected' with Zen.

Zen engineers IP VPN business solutions that cut the cost and complexity of managing business applications across the WAN-enabling public or private Cloud-based application delivery and converged Voice, Video and Data networks, with guaranteed performance.

Zen invests extensively in its state-of-the-art network infrastructure to deliver innovative solutions. Zen is also expanding its UK-wide networking by deploying Points of Presence (PoPs) directly into local exchanges to provide the bandwidth capacity that enterprise-class businesses need.

Despite its growth, Zen hasn't lost sight of its core principles. Its privately held status means it's free to maximise investment in expanding its network and service portfolio UK-wide. As a credible Internet and technology services provider, Zen's independence means it remains focused on providing best-in-class products and excellent customer service, having a stable and secure business model that makes it a safe and long term business partner.

By partnering with Zen, you can be confident that you're with an ISP who places quality, reliability and customer service at the heart of everything it does, supported by a policy of open and honest communication. All this is underpinned by its mission to "provide the best ISP service in the UK."

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