

Web-enabled applications and the internet Satisfying the growing expectations of business users

Contacts:

Bob Tarzey
Quocirca Ltd
Tel +44 1753 855794
bob.tarzey@quocirca.com

Clive Longbottom
Quocirca Ltd
Tel +44 118 9483360
clive.longbottom@quocirca.com

David Keane
Akamai
Tel +44 1784 225400
dkeane@akamai.com

RESEARCH NOTE:

The information presented in this report is based on a survey of 400 IT Directors, senior IT Managers and Commercial Managers in Western Europe. It was completed in the summer of 2007.

Those surveyed included small and large enterprises within the following industries: consumer and packaged goods (CPG), retail, manufacturing and information technology and communications (ITC).

Quocirca would like to thank all the respondents to the survey and the sponsor of this report, Akamai.

Businesses across Europe are becoming increasingly reliant on web-enabled applications that are accessed over the public internet. One of the key drivers for this is to open up communications with external organisations that are fundamental to core business processes. Doing this provides a competitive advantage but as more and more businesses web-enable their key business applications to achieve the same goals, ever better performance and availability across the internet needs to be achieved by the early movers to maintain their lead while satisfying the growing expectations of business users

- **Businesses are increasingly committed to web-enabled applications as a cost effective way of delivering critical business applications**
42% of the organisations who agreed to be interviewed for this survey were providing access over the public internet to core business applications for internal and/or external users.
- **To this end businesses have high expectations around the performance of the public internet to provide access to web enabled applications**
58% of business that rely on web-enabled applications expect their users to get responses within 3 seconds, 90% within 5 seconds. 84% expect the internet to have an availability better than 99%
- **However, there is dissatisfaction around the performance of the internet and the ability to measure and improve the end user experience**
64% of respondents consider that either the performance of the raw internet is not good enough or that they need to take – or are already taking – measures to improve the performance of specific applications across it
- **Various technologies are used by businesses to solve these problems including hardware upgrades, content-filtering and data compression**
45% said they had turned to brute force and upgraded hardware, 39% have used content-filtering to curtail user activity and save bandwidth, 32% have implemented data compression of some sort
- **Fewer had turned to subtler techniques such as managed services to monitor and maximise internet performance or appliances to handle compression, data reduction and caching**
70% of the users of web-enabled applications in this survey had implemented neither a managed service or an appliance, only 10% of the sample had deployed both
- **Those that had used a managed service or appliances showed a high level of satisfaction with the performance improvements achieved**
84% of users of managed services agreed that the service had improved internet performance as expected, for appliances the figure was 66%

CONCLUSION: The internet has come a long way since the *world wide wait* of the 1990s and is now fundamental to the delivery of business critical applications for many organisations. The drivers behind this are traditional business ones, drive down costs, increase sales – be competitive. Web-enabled applications have a key role to play in helping organisations achieve these goals and for those that have made the commitment there is no desire to turn back. But the competitive advantage will be lost as more and more businesses follow and make the internet a key part of application delivery. As that happens the competitive edge will go to those who get the most out of it and to do that will require the deployment of advanced products and services that can help meet the growing expectations of business users to tame the internet and deliver acceptable performance and availability across it.



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Scope of this report and target audience

This report looks at the degree to which today's European businesses are reliant on web-enabled applications, the benefits they are getting from investing in them, the problems they face in ensuring their availability and speed of those applications, and how these are being overcome.

The report should be of value to business and IT managers who want to make better use of the internet to drive business processes but are concerned about performance and availability issues if they become too reliant on it.

The research behind this report involved interviews with 400 senior IT managers and commercial managers with responsibility for business applications in enterprises with over 5,000 employees across Western Europe. The research focused on 4 industries where the web-enabling of applications was likely to have the most benefit; consumer and package goods (CPG), retail, manufacturing and information technology and communications (ITC).

Quocirca would like to thank all the participants for their time to take part in the telephone interviews from which the data for this research was derived. Without their participation such reports would not be possible.

Introduction – a web-enabled world

Human beings can be fickle about new technology. Within a few years of the *World Wide Web* becoming widely available in the mid-1990s some started dubbing it the *world wide wait*. Uptake of services over the Internet, once it became public property, was rapid amongst those with the wherewithal – a computer and a telephone line – but cynicism about performance grew rapidly too.

Worried a revolution might be nipped in the bud, those who thought they had the most to benefit responded rapidly. The telecommunications industry invested in high-performance backbone networks to speed internet traffic around the globe and broadband services to provide better local access. The IT industry looked to provide ways of accelerating the delivery of content over this infrastructure and ensure rapid response times whatever the apparent distance between a user and the service they were accessing.

The so called dotcom crash of 2000-2001 did not happen because these initiatives were not working, but because internet businesses and their financiers had expected too much too soon of traders and consumers. Some saw the crash as a sign that the revolution had failed, but it hadn't. Despite the scale of financial losses, technically the internet was fit for purpose and the revolution continued; it was ill conceived business plans that had caused most of the problems.

With revised and more practical commercial expectations, the range of services available over the internet continue to grow apace. The way the Web is used today has changed beyond recognition from its earliest days as a way of accessing static content to becoming the delivery mechanism for a wide range of dynamic applications. Some of these – like eBay and Google – are available to anyone, others – like internet banking and certain online business applications – are limited to signed-up customers, still more – like supply chain systems and e-procurement sites – are restricted for use only by invited groups of commercial organisations.

But in many cases applications are being web-enabled by businesses for just their internal users and some closely associated external ones, simply because this is seen as the most effective way of delivering IT applications in the 21st Century. Web-enabled applications are managed centrally

(no desktop component is required other than a web browser), they can be hosted anywhere, inside or outside the firewall and access can be granted to any users with ease, wherever they happen to be.

The growth in the use of web-enabled applications has been impressive, but not without problems. Just like the first consumer users of the World Wide Web, business users are quick to moan about poor response times and the consequences of web-enabled applications failing are far more serious for a business than an abandoned web session is for the average consumer. But these issues are surmountable.

“some see a future where businesses no longer run private internal networks”

Indeed some IT visionaries see a future where businesses no longer run private internal networks but are totally reliant on the public internet for the delivery of all applications to all users. This is the ultimate in so-called deperimeterisation (the end of the IT firewall) – a world where all applications are web-enabled. If such a vision is to become a reality one of the main responsibilities of IT departments will be ensuring reliable access to, and good performance over, the internet for all their users at all times.

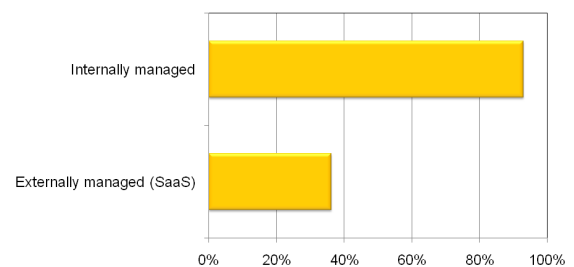
Internal or external?

To understand the trials and tribulations of web-enabling applications it is necessary to speak to those who are actually using them. Whilst many businesses were prepared to talk to Quocirca about these issues, those who were not using web-enabled applications were eliminated from the survey. Approaching half (42%) of the respondents who agreed to be interviewed said their organisations were providing access over the internet to business applications and it is these respondents whose views and experiences are reported here.

For the end users the location of an application and the way it is managed should be transparent. For the IT department it is not and there are choices to be made. Existing applications can be web-enabled and hosted internally, alternatively, an application once web-enabled can be put in the care of a third party hosted service provider (or co-location provider if you prefer). In either case management can be kept in house or outsourced, for those responsible, the location of an application once it is web-enabled becomes less relevant, it can also be managed from anywhere.

Figure 1

Access provided over the internet to internal and externally managed applications



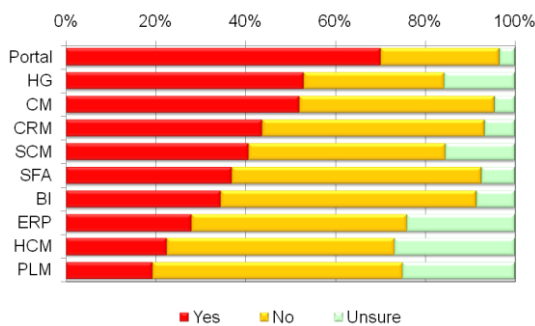
Of course these days many newly acquired applications can be supplied as web-enabled and in some cases this is the only option. The ultimate expression of this is software as a service (SaaS) where rather than buying any software at all, a business subscribes to an externally managed application

service. Whilst the headlines all go to the high profile SaaS providers like salesforce.com, WebEx and Google – the main move towards web-enablement of applications is happening in house (figure 1). And all applications are potential targets for a web interface.

From portals to product line management

Not long after the internet became a household word, for those in paid employment at least, a completely new term arrived – intranet. The use of web technology to manage and provide access to content internally was an early sign that there were real business benefits to be had from web-enablement. It is not surprising then that portals, which are a key part of any intranet, are the most widely deployed of all web-enabled applications (Figure 2). Portals vary widely in usage from providing critical information to customers about the status of orders to providing employees with daily updates on the canteen menu.

Figure 2
Types of applications that are web-enabled



Abbreviations for application types used in this report

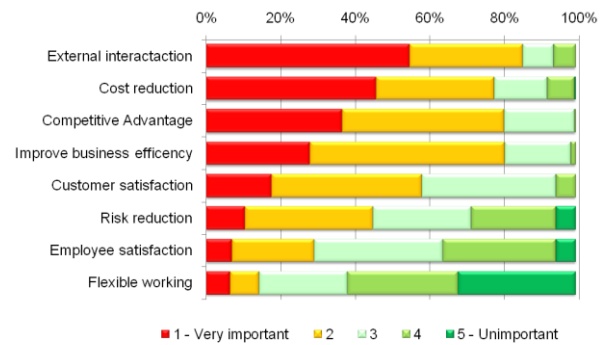
HG	Home Grown
CM	Content Management
CRM	Customer Relationship Management
SCM	Supply Chain Management
SFA	Sales Force Automation
BI	Business Intelligence
ERP	Enterprise Resource Planning
HCM	Human Capital Management
PLM	Product Line Management

Of course, whilst the application that allows a customer to view an order status may be called a portal, the information it provides will be drawn from other sources such as enterprise resource planning (ERP), customer relationship management (CRM) and supply chain management (SCM) systems. A growing number of businesses are web-enabling these applications directly. Doing so makes them available as web services and it then becomes relatively easy to link them together to create complete business processes using a service oriented architecture (SOA). Whilst a business process that is interfaced to over the web may involve multiple web-enabled applications, to the end user this should be invisible – they may just refer to it as a portal. That said it is clear that many businesses recognise discrete business applications as being web-enabled.

One of the advantages of web-enabling applications is the ease with which they can be accessed by anyone with permission, from anywhere. This enables more flexible

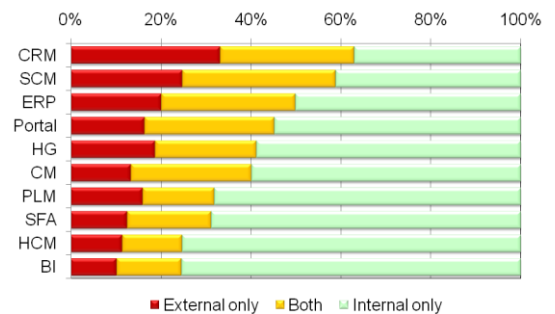
working practices, sales staff can update their forecasts from an internet café, employees can read their email from home and so on. But such flexible working practices are a by-product of web-enablement. The biggest motivation for web-enabling applications is to open them up to external users, followed closely by measurable business drivers like cost reduction and increasing competitive advantage (figure 3).

Figure 3
Drivers for web-enabling applications



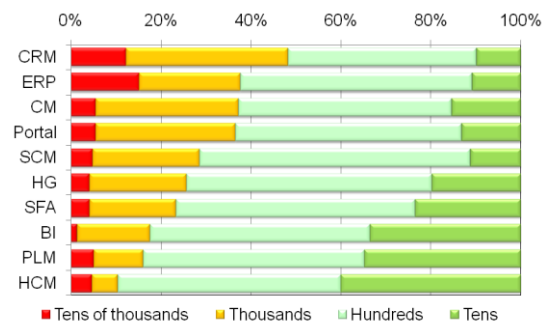
External usage is the key to understanding the criticality of making sure web-enabled applications are reliable and deliver expectable performance. Unsurprisingly, the web-enabled applications that are most widely accessed from outside of the organisation (figure 4), are those that are involved in driving business processes – CRM, SCM and ERP – and these also have higher numbers of users overall (figure 5).

Figure 4
Internal and external users of applications



"No" and "Unsure" responses not included (see Figure 2)

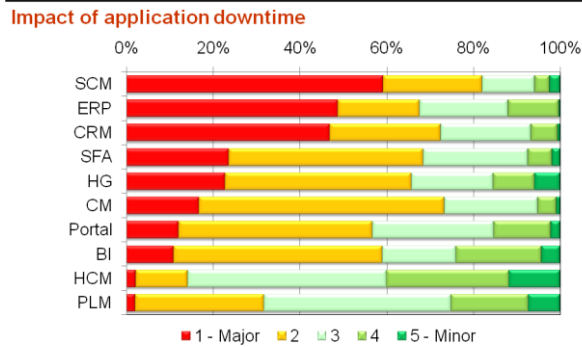
Figure 5
Numbers of users for applications



"No" and "Unsure" responses not included (see Figure 2)

And guess what, if any of these become unavailable for some reason the impact is seen as a lot more serious than it is for a portal or business intelligence application (figure 6).

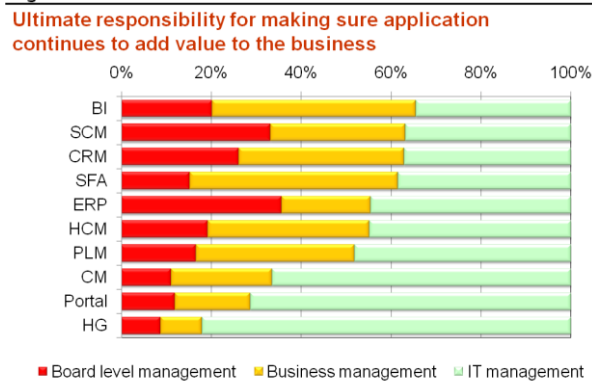
Figure 6



“No” and “Unsure” responses not included (see Figure 2)

The IT department can be sure that it is not just those external users who will be on the phone when these business critical web-enabled applications are unavailable. Board level management will be hot on their case in many organisations too. These high profile business applications keep coming up – ERP, SCM and CRM – and responsibility for them is often taken at a high level (figure 7), whilst portals are largely left in the hands of the IT department.

Figure 7



The motivators for web-enabling these applications are linked. If a customer or partner can check their own order status, money is saved. If the placement of a new order and shipment of goods can be done via the web without even a phone call, down goes the cost of sale. Obviously these things only happen with external interaction, but if that interaction is reliable and efficient, sales will also increase.

Lower costs and higher sales equal competitive advantage, but how well placed are business measure and guarantee performance levels as they become increasingly reliant on web-enabled applications?

High expectations – low guarantees

Expectations around the performance and availability of the internet for business use are high. In fact, business users are less willing to wait than consumers. An earlier survey into the performance of retail web sites¹ showed that more than half of consumers were prepared to wait 5 seconds or more for a response. However, only 11% of the business respondents to the current survey thought that this was acceptable when using the public internet to access web-enabled applications (figure 8).

“business users are less willing to wait than consumers”

Figure 8

Acceptable response times for an end user accessing a web-enabled application to complete a transaction

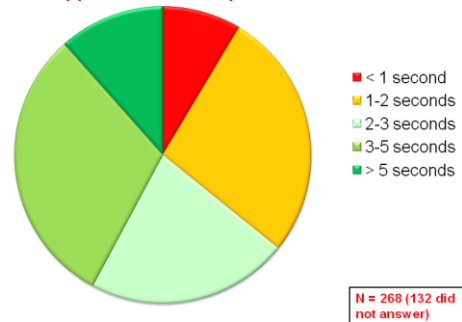
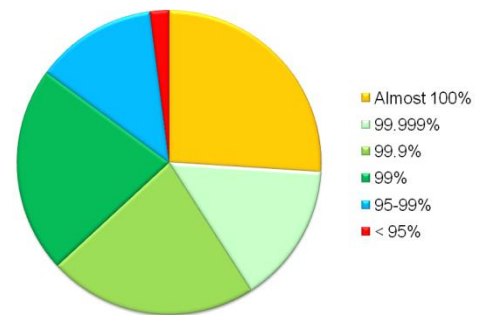


Figure 9

Acceptable availability for the public internet?



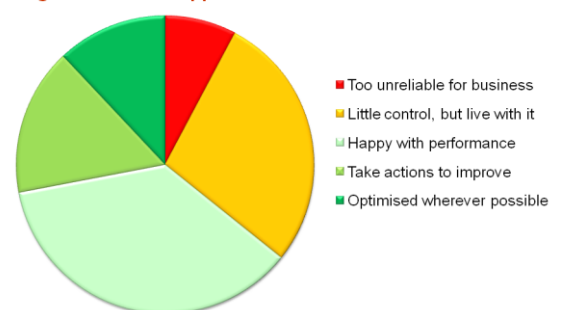
Furthermore only 15% thought that anything less than 99% availability was acceptable (figure 9). How does the internet measure up against these demands?

Not well enough.

Only about one third of respondents stated they were happy with performance, the remainder have reservations or recognising deficiencies and have taken proactive steps to improve (figure 10).

Figure 10

Views of the performance and reliability of the internet for running web-enabled applications



¹ Retail Web Site Performance, Jupiter Research, June 1st 2006

Businesses want to be able to quantify the benefits gained from web-enabled applications (figure 11) where “hitting commercial targets” is ranked highest. But second to this is end user response times, whether internal or external. If users experience delays then business processes are stalled and the anticipated competitive advantage is impacted. The trouble is that about half the respondents felt they lacked the tools to measure the end user experience (figure 12).

Figure 11
Importance of metrics for measuring the performance of web-enabled applications

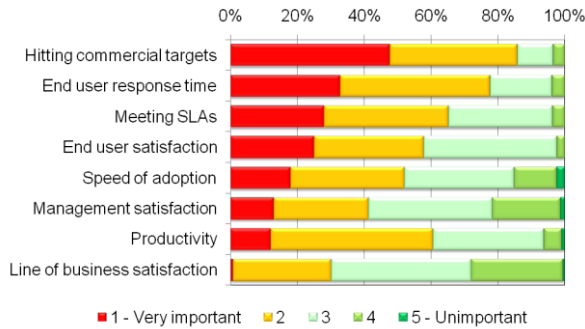
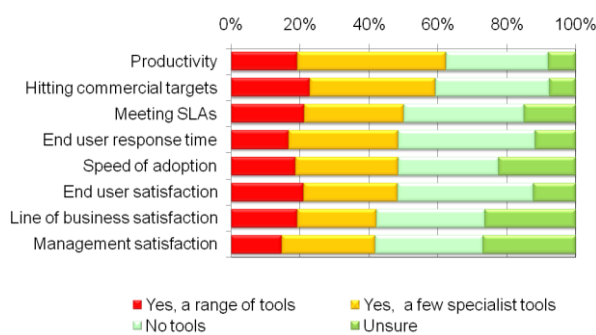
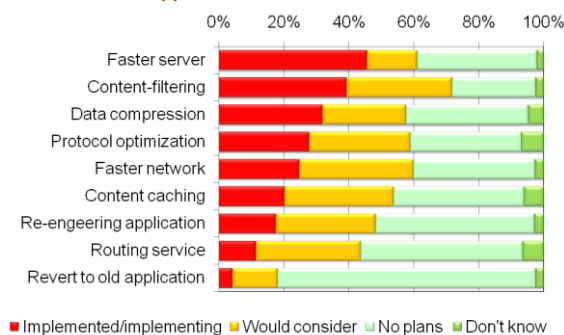


Figure 12
Availability of tools to measure performance



Whether they can measure performance accurately or not, user grumbles or lost orders will provide enough indication for many that things could be improved. The good news here – at least for those who see web-enabled applications as the future – is that very few give up and revert to old style application delivery (figure 13).

Figure 13
Remedies considered to overcome performance issues with web enabled applications



What they do tend to do is turn to brute force (more powerful hardware) or curtailing usage (content-filtering). Both of these have a place, servers will run out of steam and users will waste bandwidth on unnecessary activities, but there are more subtle ways to get more out of the internet and improve the performance of web-enabled applications such as

caching, protocol optimization and routing services. Many of the products and services that help to achieve these are relatively new and less well understood which accounts for their lower uptake.

Both managed services and appliances please

There are two main ways in which better performance can be achieved for web-enabled applications without upgrading infrastructure or forcing changes in end user behaviour; appliances and managed services.

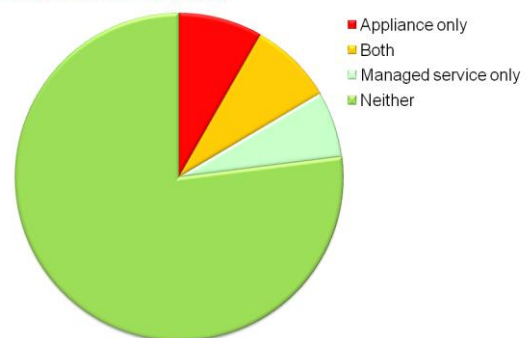
There are a wide range of appliances available and all do slightly different things. Some help offload server processing tasks within the data-centre. Others take the approach of reducing the volume of traffic through various forms of compression, data reduction and local caching of regularly used content with appliances at both ends of a network connection, for example one in the data centre and one in each branch office. Furthermore, some vendors also provide a software client to go on PCs for individual users. Appliances are a good option in an environment that is largely under the control of the IT department.

But much of the usage of web-enabled applications is across the public internet, an infrastructure that is beyond the direct control of businesses. An appliance cannot be installed at every user site, especially if users are mobile or external to the enterprise. There will be no software agent on the PCs of consumers placing orders via a web-enabled ERP system.

It is in helping to solve these latter problems that managed services come into their own. There is no need for the IT departments or application service providers to install new infrastructure or software. A subscription to such a service leverages a global platform of servers which place transaction processing intelligence close to the point of access. By doing so, each individual transaction is accelerated through a variety of techniques such as compression, protocol optimization and pre-fetching which benefit from close proximity to end users. Some managed service providers can also determine the optimal route across the internet to further reduce application response times while optimizing the availability of the internet itself.

Appliance and managed services are not mutually exclusive, about one third of organizations that have deployed either have deployed both (figure 14).

Figure 14
Implementation of appliance and managed services for improving WAN performance

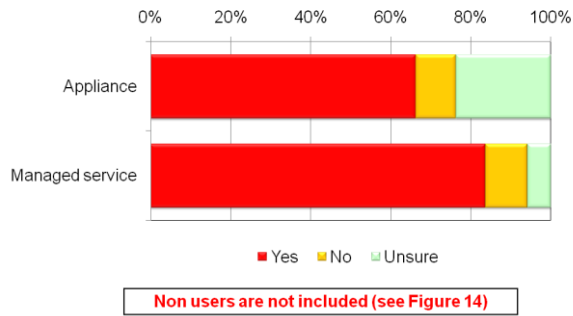


The main point is that more than three quarters of organisations that have deployed web-enabled applications are yet to make use of either appliances or managed services, and it seems they may be missing a trick – for those that

have, the satisfaction levels are very high, especially for managed services (figure 15).

“for those that have made the commitment there is no desire to turn back”

Figure 15
Have appliances or managed services speeded up web-enabled applications as expected?



Conclusion – no turning back

The internet has come a long way since the *world wide wait* of the 1990s and is now fundamental to the delivery of business critical applications for many organisations. The drivers behind this are traditional business ones, drive down costs, increase sales – be competitive. Web-enabled applications have a key role to play in helping organisations achieve these goals and for those that have made the commitment there is no desire to turn back. But the competitive advantage will be lost as more and more businesses follow and make the internet a key part of application delivery. As that happens competitive edge will go to those who get the most out of it and to do that will require the deployment of advanced products and services that can help meet the growing expectations of business users to tame the internet and deliver acceptable performance and availability across it.

Appendix A: Interview Sample Distribution

The information presented in this report was derived from 400 interviews with senior IT influencers and decision makers during a survey completed in August 2007.

The sample distribution was split as follows (figures 16 to 19):

Figure 16
Countries

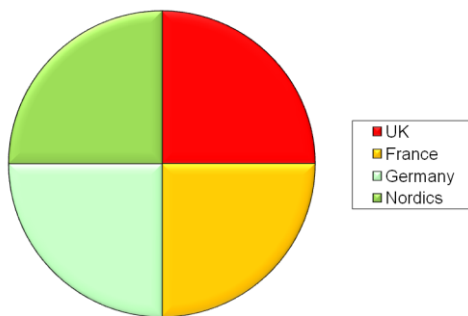


Figure 17
Job Role

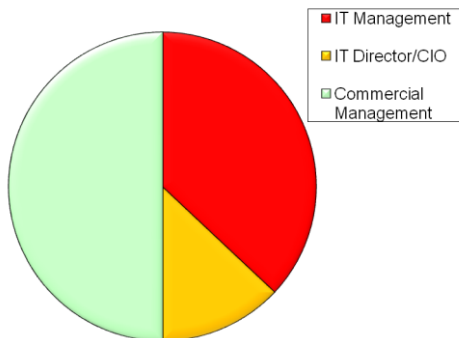


Figure 18
Size

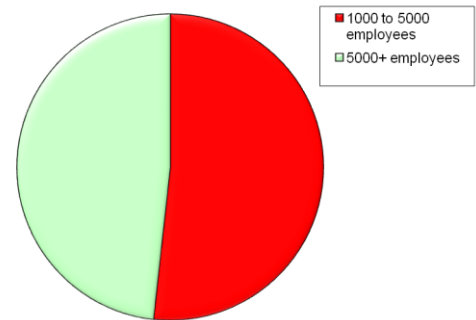
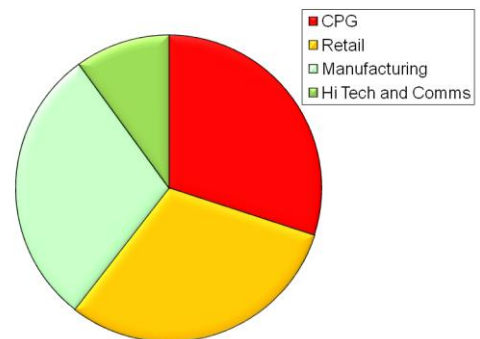


Figure 19
Industry



About Akamai

Akamai® is the leading global service provider for accelerating content and business processes online. Thousands of organizations have formed trusted relationships with Akamai, improving their revenue and reducing costs by maximizing the performance of their online businesses. Leveraging the Akamai EdgePlatform, these organizations gain business advantage today, and have the foundation for the emerging Web solutions of tomorrow. Akamai is "The Trusted Choice for Online Business." For more information, visit www.akamai.com.



About Quocirca

Quocirca is a primary research and analysis company specialising in the business impact of information technology and communications (ITC). With worldwide, native language reach, Quocirca provides in-depth insight into the views of buyers and influencers in large, mid-sized and small organisations. Its analyst team is made up of real-world practitioners with firsthand experience of ITC delivery who continuously research and track the industry in the following key areas:

- Business process evolution and enablement
- Enterprise solutions and integration
- Business intelligence and reporting
- Communications, collaboration and mobility
- Infrastructure and IT systems management
- Systems security and end-point management
- Utility computing and delivery of IT as a service
- IT delivery channels and practices
- IT investment activity, behaviour and planning
- Public sector technology adoption and issues
- Integrated print management

Researching perceptions, Quocirca uncovers the real hurdles to technology adoption – the personal and political aspects of an organisation's environment and the pressures of the need for demonstrable business value in any implementation. This capacity to uncover and report on end-user perceptions in the market enables Quocirca to advise on the realities of technology adoption, not the promises.

Quocirca research is always pragmatic, business orientated and conducted in the context of the bigger picture. ITC has the ability to transform business and business process, but often fails to do so. Quocirca's mission is to help organisations improve their success rate in process enablement through better levels of understanding and the adoption of the correct technologies at the correct time.

Quocirca has a pro-active primary research programme, regularly surveying users, purchasers and resellers of ITC products and services on emerging, evolving and maturing technologies. Over time, Quocirca has built a picture of long-term investment trends, providing invaluable information for the whole of the ITC community.

Quocirca works with global and local providers of ITC products and services to help them deliver on the promise that ITC holds for business. Quocirca's clients include Oracle, Microsoft, IBM, Dell, T-Mobile, Vodafone, EMC, Symantec and Cisco, along with other large and medium sized vendors, service providers and more specialist firms.

Sponsorship of specific studies by such organisations allows much of Quocirca's research to be placed into the public domain at no cost. Quocirca's reach is great – through a network of media partners, Quocirca publishes its research to an audience possibly measured in millions.

Quocirca's independent culture and the real-world experience of Quocirca's analysts ensure that our research and analysis is always objective, accurate, actionable and challenging.

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Contact:

Quocirca Ltd
Mountbatten House
Fairacres
Windsor
Berkshire
SL4 4LE
United Kingdom
Tel +44 1753 754 838

The logo for Quocirca, featuring the word "quocirca" in a lowercase, sans-serif font. The letters "quoc" are in blue, "irca" is in red, and the "c" at the end is in black.