QNB EXECUTIVE SUMMARY

QNB **In**tell**ig**ence
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Server-Based and Thin Client Computing
Promise and Practicalities

Managing distributed client server environments and the ever-evolving personal computer can be a challenge. Introducing a degree of centralisation through a Server Based Computing (SBC) approach can help. But does this approach sit comfortably with modern Web architectures, mobile technology and enterprise applications? In this report, we consider some of the problems and concerns of IT professionals and the potential for modern Access Infrastructure Software and Thin Client devices to assist in overcoming them.

- **The increasing complexity of the PC environment is a concern to 57% of IT professionals**
  Lying at the root of this concern is the relentless release of ever more demanding software and the ongoing challenge of keeping the PC environment secure.

- **Poorly performing applications and PC instability frustrate over a third of users**
  38% of IT professionals cited poor application performance as a common complaint from users. Frequent crashes and reboots were reported as common issues by 33%. Other complaints included the inability to run the latest applications and loss of data from local hard disks.

- **The administration and support implications are significant**
  Over 70% characterised the job of administering the PC desktop environment as either a "Significant task" or a "Costly and time consuming burden". A quarter of respondents said that desktop support accounted for more than 35% of help desk calls and a further 15% said over half of the calls received fell into this category.

- **Server-Based Computing (SBC) directly addresses many of the issues**
  Two thirds of those utilising Access Infrastructure Software to implement SBC on a broad strategic basis indicated a significant impact on the ability to deploy, update and improve the availability of applications. Other benefits highlighted by over half of respondents were the safeguarding of data from loss and abuse, extending the life of existing IT assets and delivering responsive, effective technical support.

- **Modern Access Infrastructure Software particularly supports progressive working practices**
  Flexible working practices and mobility initiatives are becoming more common and the relevance of Access Infrastructure Software in this context was acknowledged. Organisations with high numbers of Nomadic workers are three times more likely to adopt SBC strategically than more static organisations. 64% of respondents said SBC directly complemented or comfortably coexisted with mobile applications. SBC was also considered highly relevant for providing remote access to home workers and field workers.

- **Microsoft and Citrix dominate the SBC landscape but Citrix leads the way and is preferred for strategic use**
  Overall, 38% of the sample indicated use of Microsoft Terminal Server, 27% use Citrix and approximately 20% said they used other products. 97% of those making broad strategic use of SBC use Microsoft, Citrix or some combination of the two. Citrix dominates within this strategic user group, being used exclusively by 52% of organisations and alongside Microsoft in a further 16%. Overall, Citrix received the highest number of votes for vendors perceived to be leading the way in Access Infrastructure technology. Microsoft and IBM followed in joint second/third position.

- **Open Source is creeping into the SBC space**
  Of the "Other" technologies mentioned by respondents, the most popular was VNC, an open source SBC solution that is used by 7% of the sample. Use of VNC appears to be very tactical at the moment so it is more of a potential threat to Microsoft than to Citrix. This is an area of Open Source activity that Microsoft will undoubtedly be adding to its "watch list".

- **Extending an SBC strategy to embrace Thin Client devices can lead to big paybacks**
  Half of the organisations indicating extensive use of Thin Clients believe the total cost of ownership of these devices is at least 30% less than PCs. Compared to PCs, Thin Clients are quicker to install and easier to manage, leading to dramatic reductions in administration and technical support overhead. They also have a significantly longer life, estimated at 5 years or more by over half of respondents, compared to the typical 3 years for a PC.

- **Organisations must be selective to unlock the benefits**
  A variety of practical issues with SBC and Thin Clients were highlighted, but most of these were no different to any other network based application such as email or ERP. Perceived lack of flexibility and a need to work off-line were more genuine concerns for some types of user. Organisations wishing to gain the benefit of SBC and Thin client must avoid getting distracted by this minority. The rewards are there for those who select the right targets for deployment.

CITRIX

*An independent investigation by QNB Intelligence
on behalf of Neoware and Citrix Systems*

neoware

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About this report

This report is intended to provide an insight into two important technology areas – Server-Based Computing and Thin Client devices. It is based on the results of an online survey of IT professionals completed in October 2003, and is written specifically for those involved in making strategic IT investment decisions within their company or advising others on how to make such decisions.

All the research and interpretation contained in this document were conducted completely independently. We hope the report is of use to you and welcome your feedback.

Context for this Report

The acceptance of the Internet as a routine part of our daily lives is now history, but developments and trends in IT and communications continue to impact the way companies operate and support their workforces. It has become increasingly more common, for example, for desktop PCs to be replaced by notebooks and for many mobile professionals to embrace PDAs, and other portable business computing devices, to gain access to business information on the move. There is then the tremendous proliferation of connection options, from DSL in the home, to wireless networks based on technologies such as WiFi, GPRS and 1xRTT. More than ever, the average user now has a great deal of power and flexibility at their fingertips.

With these developments, however, come issues related to complexity, management, cost control and security. The move to "distributed everything" therefore, needs to be checked if organisations are to maintain any level of control of their IT systems and business operations. A well-balanced IT strategy will be based on distributing some elements, but centralising others to achieve the desired result.

The benefits of centralisation have played a part in driving the increasing use of Web based architectures, particularly in the context of mainstream business applications such as ERP and CRM. Vendors like SAP, Oracle and Siebel have all reworked their solutions in recent years to allow access via a Web browser.

It is against this background that we executed the research study reported here.

Study Design

The aim of the study was to explore activity and perceptions relating two particular classes of technology solution – Server-Based Computing (SBC) and Thin Client devices. In order to achieve this, a questionnaire was made available over the Web to a panel of pre-recruited participants. Questions were answered online and responses captured electronically.

To help respondents frame their responses appropriately, it was necessary to define the term "Server-Based Computing" as precisely as possible. The following preamble was therefore inserted into the questionnaire:

> *"We would now like your opinion in some specific areas concerning the use of SBC. The type of software that enables this is sometimes called Access Infrastructure Software, which allows the user interface for an application running on a server to be sent to a remote device. The application itself need not be native to the device which in turn may be anything from a full blown PC running a "terminal window" to a genuine Thin Client terminal or even a PDA. Examples of SBC software products include Microsoft Terminal Server, Tarantella and Citrix MetaFrame. Even if you are not a user of SBC, we would still be interested in your perceptions and opinions".*

The use of online questionnaires with a "volunteer" audience has some limitations that it is important to acknowledge. In particular, the sample ends up skewed towards people who are interested in the subject matter. In this study, those with more knowledge and interest in SBC and Thin Clients would be more likely to participate than others. We therefore have to be careful about how the final results are interpreted, as

the makeup of the sample may not be truly representative of the world at large. It would be inappropriate, for example, to make statements such as "X% of companies have a strategic commitment to Thin Clients" as X would almost certainly be artificially high. However, it is perfectly legitimate to compare the perceptions and experiences of SBC users with non-users, strategic adopters to those making more tactical use, etc. Much of the value in this report comes from making such comparisons between groups.

In total, 1624 people responded to the questionnaire. The majority of these were IT professionals and the makeup of the sample in terms of geographic split, size of company represented and level of individual decision making authority is presented in an Attachment to this report.

Neoware and Citrix Systems funded the study itself, though QNB Intelligence Ltd (QNB) executed all of the work involved on a completely independent basis. QNB is a Quocirca company with an impeccable track record of delivering objective research to financial services companies such as Morgan Stanley and the likes of IBM, Oracle and Microsoft from the IT industry.

SBC Adoption and Rationale

There was a good level of familiarity with SBC amongst the respondents. Overall, around 60% indicated enough knowledge to provide an informed decision, with slightly more knowledge amongst influencers and approvers of IT spend (Figure 1).

Figure 1
How familiar are you with SBC?

Figure 2
Which best describes the overall use of SBC in your organisation?
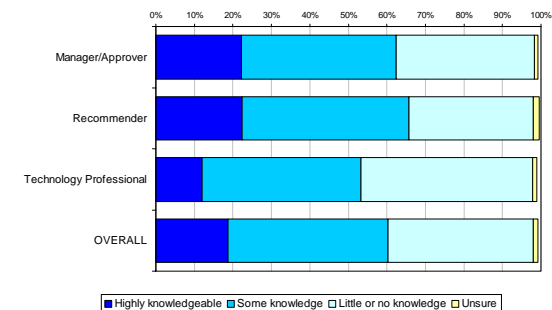
The level of commitment to SBC varied considerably. Around 10% indicated broad strategic deployment (approx 160 respondents), whilst 35% (approx 570 respondents) declared selected tactical deployment of SBC (Figure 2).
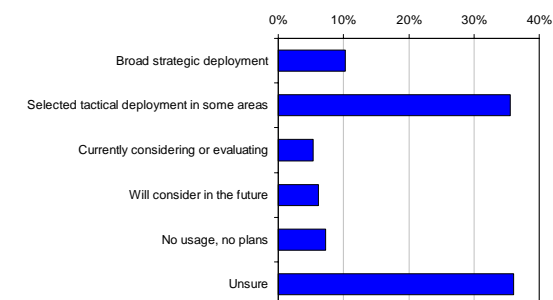
Respondents replying "Unsure" were largely those who had little or no knowledge of SBC, so were not in a position to comment. This group contributed their thoughts and knowledge of the PC/desktop environment, which is explored later in this report.

High Level Benefits

When looking at the rationale for SBC, it is useful to compare the opinions of the general pool of respondents (at least, those who provided an opinion) with those from respondents indicating broad strategic deployment. This allows us to contrast the generally accepted perception with the reality observed by those who have embraced the technology fully.

It was generally accepted by our respondents that SBC contributes significantly to the whole process of delivering new capability to end-users and keeping users up-to-date thereafter. High levels of benefit were also noted in association with data security, application availability and the minimisation of costs and overhead (Figure 3).

Figure 3

How would you estimate the overall impact (or potential impact) of SBC on the following? (1=no impact, 5=high impact)
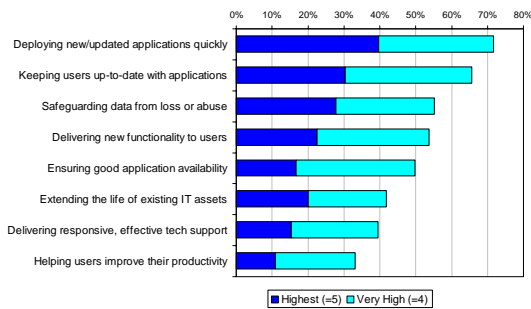
All of these benefits are strengthened and amplified when we look at the responses from those indicating broad strategic rollout of SBC (Figure 4).

Figure 4

How would you estimate the overall impact (or potential impact) of SBC on the following? (1=no impact, 5=high impact)
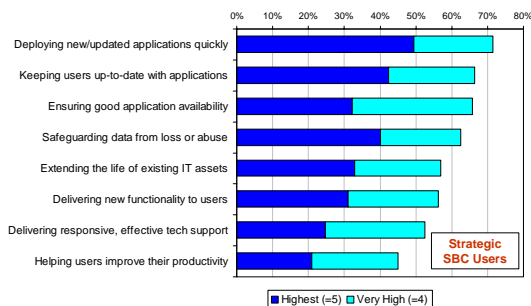
There are probably two reasons for this difference. Firstly, the second group are likely to have inherently more familiarity with the actual benefits, suggesting that the true benefit only becomes clear once organisations begin using SBC in earnest. There will also be elements of critical mass and economy of scale. As with many other technologies and ideas, the level of benefit accelerates with the level of usage.

Suitability for Broad Application Deployment

We see the same phenomenon when looking at the purposes to which SBC may be applied (Figures 5 and 6)

Figure 5

How suitable is SBC for the following purposes? (1=Not suitable, 5=Highly suitable)
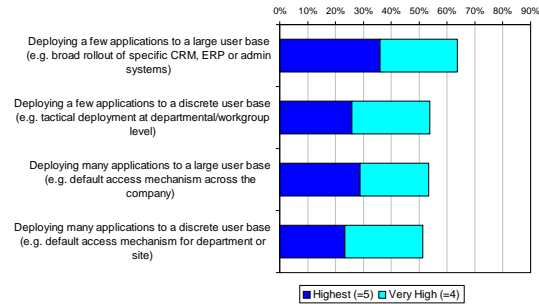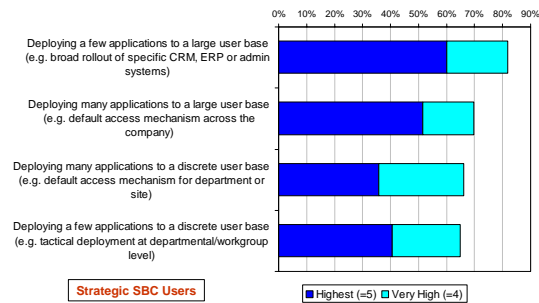

Figure 6

How suitable is SBC for the following purposes? (1=Not suitable, 5=Highly suitable)

Note here that those with strategic deployment experience appreciate the suitability of SBC as a mechanism for driving applications into a large user base much more.

Support for Emerging Working Practices

Many organisations are embracing new ways of managing and supporting their workforce. Some of this has to do with taking advantage of the advancements in communications technology providing more freedom; some has to do with simply increasing efficiency and driving cost out of the equation.

Home working is a good example of a practice that reduces facilities related overheads and provides freedom and flexibility to employees, boosting both their efficiency and quality of life.

Improving the efficiency and enhancing the communication capability of employees working away from the office is another area in which many organisations have invested time. We can think here of everyone from sales people working out of hotel rooms to consultants and other professionals who routinely work from customer premises.

A practice that goes hand in hand with both home working and field working is allocating a number of desks or workstations for use by any employee visiting one of the organisation's offices temporarily. This is a practice known as "hot desking" in Europe and "hotelling" in the USA.

Our respondents in this study felt that SBC had a lot to offer in supporting such progressive working styles and practices (Figure 7), with the familiar elevation of benefits noted by those who have committed to SBC strategically (Figure 8).

Figure 7

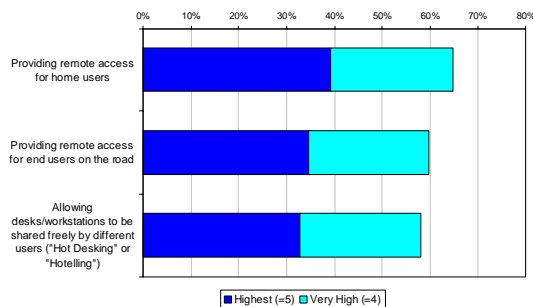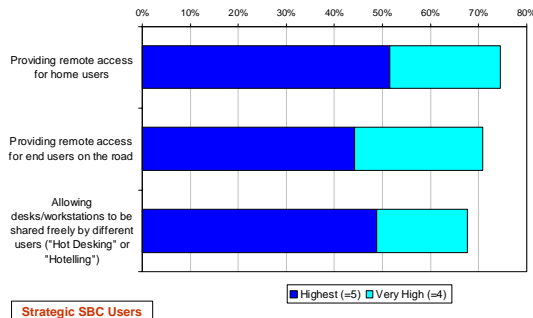**How suitable is SBC for the following purposes? (1=Not suitable, 5=Highly suitable)**

Figure 8

How suitable is SBC for the following purposes? (1=Not suitable, 5=Highly suitable)
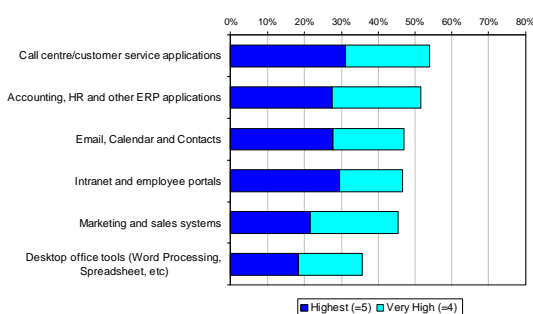

Strategic SBC Users

Suitability for Specific Applications

From an application perspective, SBC suitability was acknowledged across all of the major application classes, though the emphasis was put more on systems that are naturally centralised (call centre, accounting, collaboration, etc) than on software that traditionally resides on the desktop such as office tools (Figure 9)

Figure 9

How suitable is SBC for deploying the following types of application? (1=Not suitable, 5=Highly suitable)
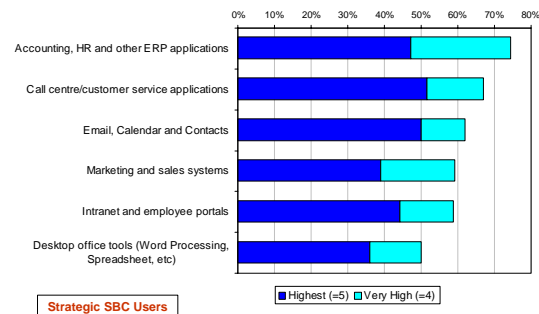

This difference was less marked with strategic SBC users who acknowledged the suitability of the approach for

deployment of traditional desktop tools much more freely (Figure 10).

Figure 10

How suitable is SBC for deploying the following types of application? (1=Not suitable, 5=Highly suitable)

Strategic SBC Users

Cost Related Benefits

Cost reduction benefits were acknowledged to a degree (Figure 11), but even with strategic users, only half of the respondents gave these benefits a high rating of 4 or 5 out of 5 (Figure 12).

Figure 11

How would you estimate the impact (or potential impact) of SBC on reducing the following types of IT spend? (1=no impact, 5=high impact)
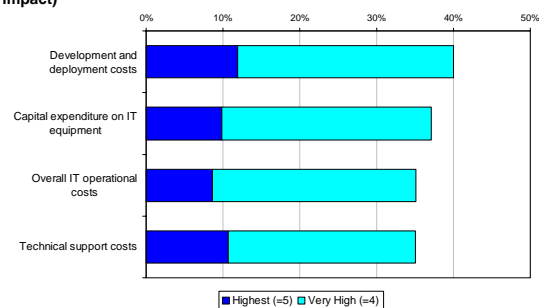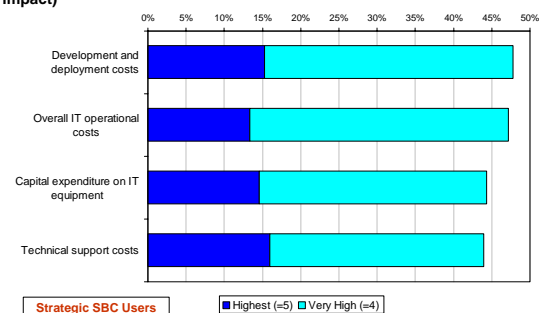

Figure 12

How would you estimate the impact (or potential impact) of SBC on reducing the following types of IT spend? (1=no impact, 5=high impact)

Strategic SBC Users

The important lesson here is that the justification for investment in SBC is not strictly cost based. If we contrast Figure 12 with Figure 4, we can see that faster and more efficient development, rollout and update of business applications is probably a more important driver.

This translates to an important top-line impact in terms of time to benefit for new and updated applications. Put simply, people are telling us that SBC helps to get the right applications deployed to users as quickly as possible so the business can reap the associated benefits sooner.

SBC Deployment in Practice

The acceleration of benefits with scale of deployment means that larger organisations have taken up SBC more readily than smaller ones (Figure 13).

Figure 13

Which best describes the overall use of SBC in your organisation?
by size of organisation
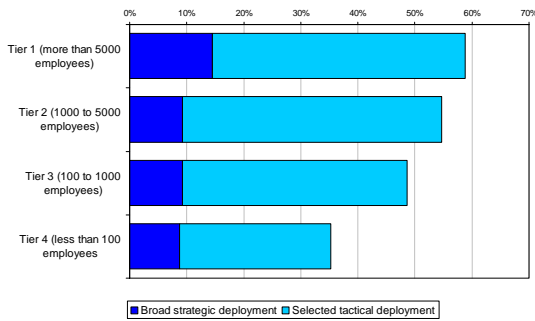
There is also a clear correlation between SBC adoption and organisations with a higher number of nomadic workers, i.e. workers that frequently move from desk to desk, office to office, branch to branch, etc (Figure 14).

Figure 14

Which best describes the overall use of SBC in your organisation?
*by number of nomadic workers*
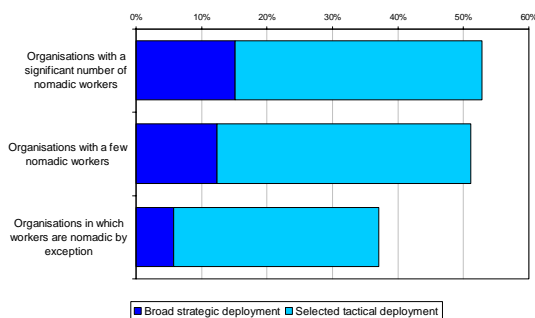
This makes absolute sense, as one of the benefits of SBC is the ability for an employee to log in at any workstation and have the whole of their personal environment immediately accessible to them.

When we look at the specific use of SBC, we see that most broad deployments are associated with rolling out a few applications to a large user base (Figure 15).

Figure 15

Which best describes the status of your use of Server Based Computing for the following purposes?
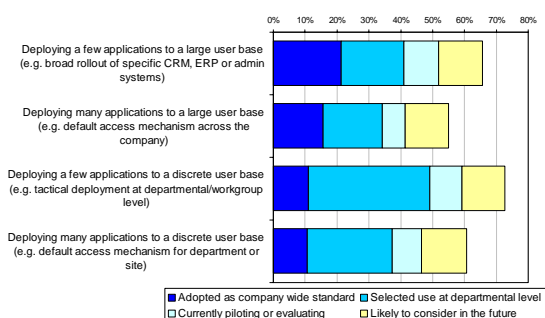

This is consistent with the use of SBC as an efficient way of providing access to applications such as SAP, Siebel, Peoplesoft and Oracle for a large number of users. More of this later.

Respondents also told us that SBC's potential to support progressive working practices was not just theory. A significant number are already making use of SBC in this context or are actively investigating doing so (Figure 16).
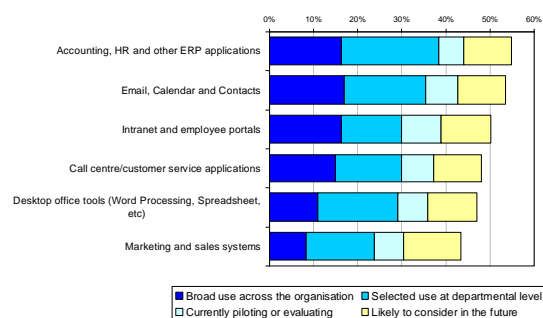
Figure 16

Which best describes the status of your use of Server Based Computing for the following purposes?
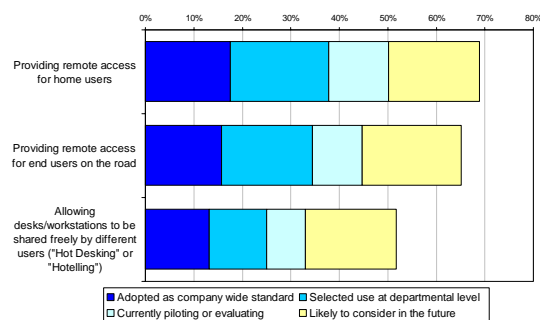
We see a similar picture to this for specific application classes (Figure 17).

Figure 17

Which best describes the status of your company's use of SBC for the following types of application?

Note here that the high use of SBC for collaborative applications, such as Microsoft Exchange, is consistent with many organisations consolidating the numerous servers distributed amongst departments into a single coherent architecture. The payback here in terms of server support and management costs can be extremely attractive.

Specific SBC Technologies

Before embarking on this study, we suspected that a few key technologies dominated the mainstream SBC marketplace (given our definition). The first major player in the space is Microsoft, who has delivered Terminal Server functionality as an extension to its core server operating systems for a number of years. The other obvious player is Citrix with its MetaFrame portfolio of solutions. Traditionally, there has also been a third player commonly mentioned in the context of mainstream SBC – Tarantella.

We asked respondents to tell us which of these three SBC solutions they used and to what extent. An "Other" option was offered in addition, and if respondents chose this they

were invited to give the name of the alternative products or vendors they used.

Of the three main options, more organisations use Microsoft Terminal Services than any other, although there is an indication that Citrix has the edge in terms of degree of usage (Figure 18):

Figure 18
To what extent do you use the following SBC technologies within your organisation?
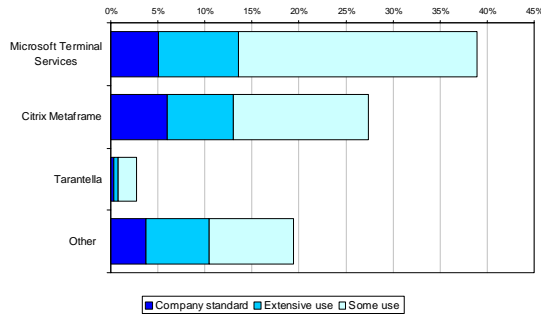
Sadly, it seems Tarantella has had its day. Only a handful of organisations indicated use of this product.

The technologies volunteered by respondents in relation to the "Other" category were extremely varied, indicating that the market is very fragmented once we get beyond Microsoft and Citrix. Nevertheless, there were some options that received a significant number of mentions (Figure 19).

Figure 19
To what extent do you use the following SBC technologies within your organisation?
Other Technologies with a significant number of mentions
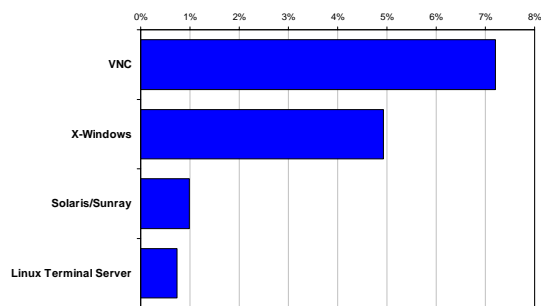
We see the Unix community represented here with X-Windows, and to a much lesser extent, Sun based solutions revolving around SunRay diskless workstations and Solaris.

It is perhaps more interesting to note that Open Source solutions have crept into the SBC space. In this camp, Linux based terminal services just about appeared on the map, but with less than 1% of respondents mentioning it. More significantly, 7% of respondents indicated use of VNC, which stands for "Virtual Network Computing". At a high level, this is designed to tackle the same problem as Citrix MetaFrame, i.e. allowing operating system independent access from any type of client to any type of server.

The other technology option receiving a significant number of mentions was SSH. However, we have omitted this from the above chart as it tends to be used primarily by systems people rather than end users.

Technology of Choice for Strategic Use

Whilst some of these "Other" technologies appear to be quite popular, it is important to note that 97% of those indicating broad strategic use of SBC are using Microsoft, Citrix or some combination of the two (Figure 20).

Figure 20
Product alignment within organisations indicating "Broad strategic deployment of SBC"
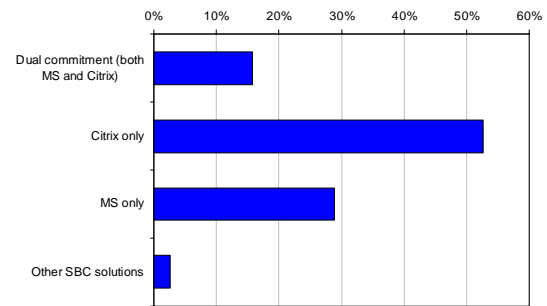

The dominance of Citrix amongst more strategic users is also clear from this chart.

Variation in Technology Use by Organisation Size

If we zoom out a little and look at organisations making significant (though not necessarily strategic) use of SBC, we can see that product allegiances vary depending on the size of the organisation (Figure 21).

Figure 21
Product alignment within organisations standardising or making extensive use of specific SBC solutions *by company size*
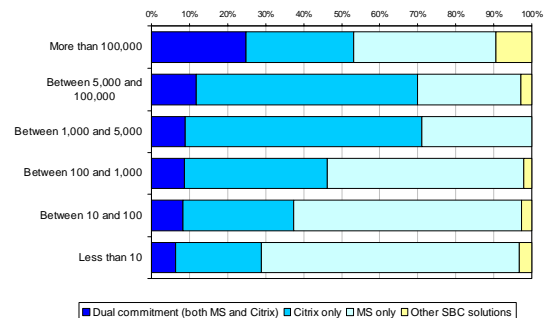
The largest organisations with more than 100,000 employees are more likely to use a blend of Microsoft and Citrix technology and the independent use of either product is slightly in favour of Microsoft. As we drop down to the 5,000 to 100,000 and 1,000 to 5,000 employee groups, Citrix begins to dominate. Microsoft then becomes more popular again below this and quite clearly dominates at the low end.

The mixed use at the high end is understandable, as most companies of this size have difficulty in standardising IT architectures and applications across the entire organisation. This is usually due to the diverse range of business operations along with devolved responsibility for IT systems. Even very large SAP sites, for example, often have difficulty in standardising across all of their subsidiaries worldwide.

We can also speculate that the presence of Microsoft volume agreements, which are common at the very high end, makes

it easier commercially for companies to adopt Microsoft Terminal Server, especially for tactical use at departmental or workgroup level.

Organisations at the next level down have more opportunity to standardise, as IT strategy and operations are often more coherent. The inherent scalability of Citrix MetaFrame then makes it the most attractive and practical option.

The relative lack of Citrix penetration amongst smaller companies is probably due to two things. Being able to just "switch on" Microsoft Terminal Services as an extension to an existing server makes it more immediately accessible, especially to those merely wishing to experiment with small pilots or implement in a very tactical way. Citrix has traditionally required more pre-meditated up front investment, both in terms of licence fees and IT resource commitment. This gets recouped quickly as implementations are scaled up, but can represent a barrier to smaller organisations getting going.

The other factor likely to be responsible for the low-end picture is simply the focus of Citrix. In recent years, the company has invested heavily in account management resource to enhance its relationships in the customer base and encourage more use of Citrix technology. Such a "direct touch" approach is only possible with the larger customers, as there are far too many smaller ones to cover in this way.

Preferred Technology for Enterprise Application Rollouts

We saw earlier (Figure 17) that the most prevalent application class to rollout with SBC was "Accounting, HR and other ERP applications". When we look at preferred SBC technologies in this Enterprise Application space, we see that Citrix comes out significantly ahead (Figure 22).

Figure 22

OPINION: Suitability of SBC for deploying a few applications to a large user base (e.g. broad rollout of specific CRM, ERP or admin systems)
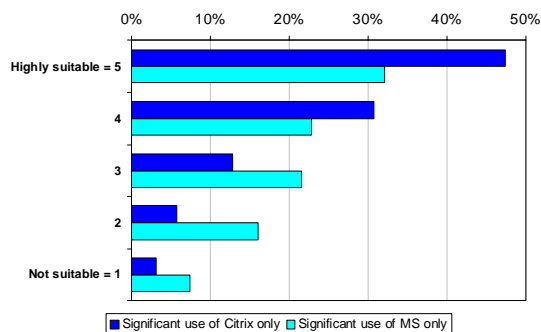
This is likely to be due to a combination of inherent scalability and organisations acknowledging the value of optimisations in MetaFrame designed to enhance the user experience for transaction oriented applications.

Vendors in the Overall Access Infrastructure Landscape

If we broaden our view from SBC to considering the whole of the Access Infrastructure landscape, other vendors begin to become important.

When asked an open, unprompted question about which vendors lead the way in the Access Infrastructure space, we see a combination of SBC players, network infrastructure companies and hardware vendors (Figure 23).

Figure 23

Which three vendors do you regard as leading the way in [the field of Access Infrastructure Solutions]?
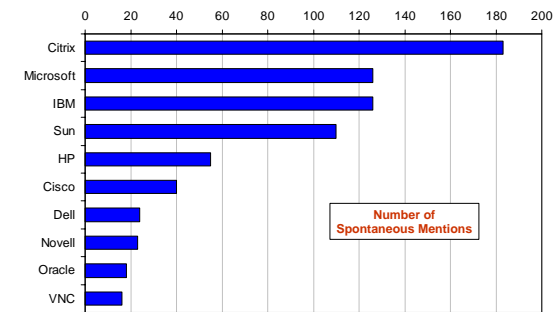
It is not surprising to see Citrix and Microsoft at the head of this Top 10 list, or indeed, IBM with its all-embracing approach. It is nowadays quite rare, however, to see Sun appearing high up on any list given its recent woes. It should be encouraged that its position in this important Access Infrastructure space is so pronounced.

SBC Concerns and Issues

One type of potential concern stands out above all others with regard to the practicalities of SBC – resilience. This is indicated in two ways by our respondents, who highlight the potential for more users to be affected by a single failure and the danger of downtime due to communications outages (Figure 24).

Figure 24

In your opinion, how do you rate the following potential concerns in relation to SBC? (1=No concern, 5=Major Concern)
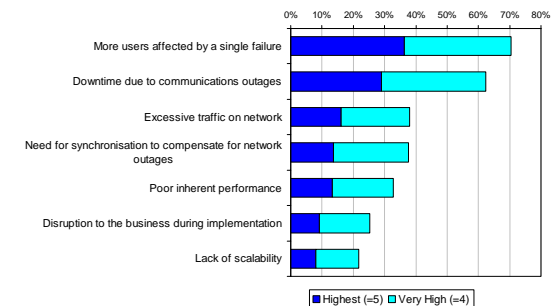
In practical terms, there is already a high degree of reliance on the corporate network in relation to business critical applications such as email and ERP. Even without SBC, this has resulted in the need for robust networking being dealt with as a core requirement by most organisations. Concerns here are therefore not unique to the technologies we have been discussing.

Nevertheless, such concerns do reinforce the requirement for sound network and architecture planning when looking at any significant SBC rollout. The good news is that the mainstream technologies in this space have grown up over the course of the past decade, so there are lots of relevant skills and resources available in the marketplace to help if necessary.

If the resilience issue is not a showstopper, the obvious question is what stands in the way of organisations adopting or extending their use of SBC.

The overwhelming reason cited for companies not driving more quickly down the SBC route is competition for funds and resources with other IT initiatives (Figure 25).

Figure 25

How significant are the following potential obstacles to you adopting or extending your use of SBC? (1=low, 5=high)
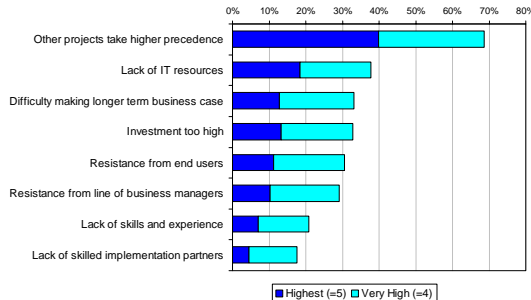
One explanation for this is the current high emphasis put on cost reduction within many IT departments (Figure 26).

Figure 26

What level of priority has been given to controlling the following types of IT spend (on a scale of 1-5 where 1=low priority and 5=high priority)?
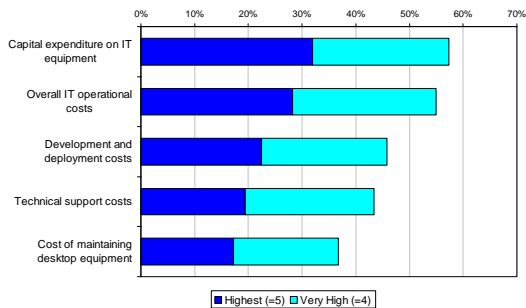

Whilst SBC contributes in this area, we have seen previously that much of the benefit comes in ways that are more top-line focussed, and sometimes less tangible – e.g. getting the latest applications into the hands of end users more quickly, dealing with the problem of data loss and abuse, improving service levels to users, etc. Projects delivering explicit short term cost savings will therefore often take precedent.

We can see evidence of this when we correlate attitude to IT investments with strategic rollout of SBC. Companies who invest proactively to gain business benefit are 63% more likely to commit than reactive ones (Figure 27).

Figure 27

Variation in broad deployment of SBC by attitude to IT investment
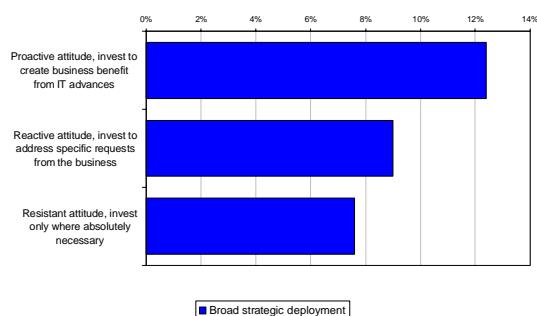

SBC and Other Technology Initiatives

Given that other IT initiatives taking precedent is the main factor limiting the further use of SBC, it is interesting to look at the interplay between SBC and some of these initiatives. When asked whether SBC complements or conflicts with other major technologies, the answer was mostly positive or neutral in every case (Figure 28).

Figure 28

Does use of SBC complement or conflict with the following?
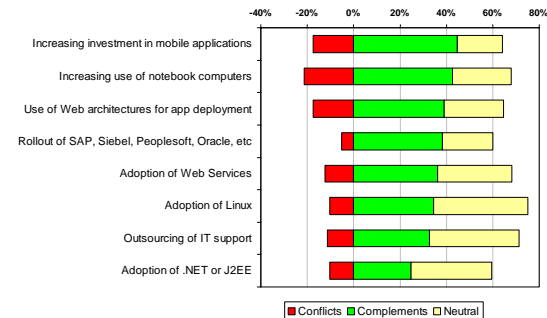
The complementary interplay between SBC and mobile technology and applications is very easy to understand. When a company deploys mobile devices to its workforce, whether notebook PCs, PDAs or any other small form factor devices, it wants to ensure the maximum business impact.

SBC can help here. It will not be the only deployment architecture for mobile applications, as wireless network coverage and quality of service of issues mean that some solutions will need to be based on synchronisation and message queuing. However, the wide variation in mobile device capability and characteristics means that SBC is the most efficient way of delivering the broadest range of applications to the broadest range of client devices.

We can also see from Figure 28, that SBC is viewed as largely complementary to the deployment of Web architectures and adoption of the Web services approach. The service-orientated nature of these lends itself well to the centralised computing model that SBC represents.

The use of SBC in the context of enterprise applications has already been discussed. We know from anecdotal evidence that Citrix in particular can ease the initial deployment of such applications, particularly to large user bases, and make the subsequent rollout of new releases more efficient.

The End-User Perspective

We have talked a lot about the business and IT perspective so far in this report. But what of end users?

This end user perspective is extremely important as user acceptance of any new technology or application is crucial to gaining return on investment.

Whilst the respondents in this study were predominantly from the IT professional and management community, we did ask for their feedback on the views of their users.

Firstly, with regard to SBC, we see that the main end-user concerns have to do with loss of control and freedom, the practicalities of mobile working and the performance of applications (Figure 29).

Figure 29

Why would end users object to SBC? Please rate the following on a scale of 1-5 where 1=no objection, 5=serious objection

Figure 31

How common is it for PC users to complain or express dissatisfaction or frustration with the following problems? (1=Very rare, 5=extremely common)
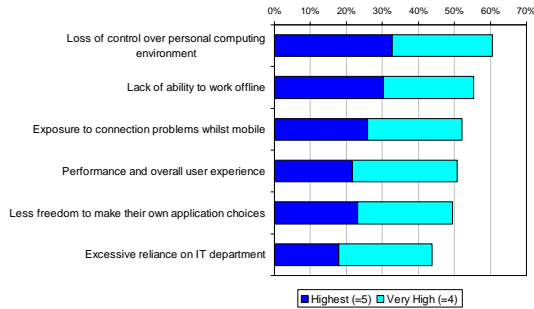

The first one of these is probably the most tricky to overcome in the real world, especially with professional business users who are used to "controlling" their own PC applications. Dealing with this issue can only be achieved through consultation and negotiation between business management and the IT department.

The second and third issues around mobility are real for those users that genuinely need the ability to work offline. The need for this is often exaggerated, however, as our respondents made clear to us (Figure 30)

Figure 30

What percentage of your users genuinely need the ability to work offline, e.g. on a notebook PC whilst out of the office?
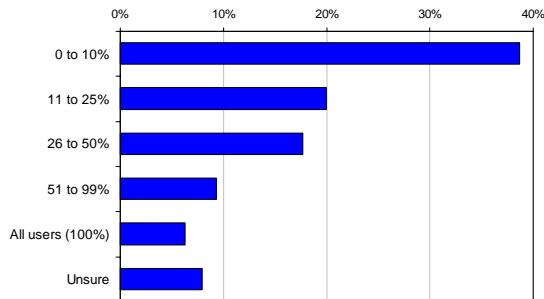
Nearly 40% told us that 10% or less of their workforce had a genuine need for disconnected working. Whichever way we cut it, the majority of employees in the mainstream could work effectively with applications deployed to them using SBC.

The other perceived end-user objection that came through from Figure 29 was performance and end user experience. This leads us quite nicely into a look at the traditional PC desktop environment.
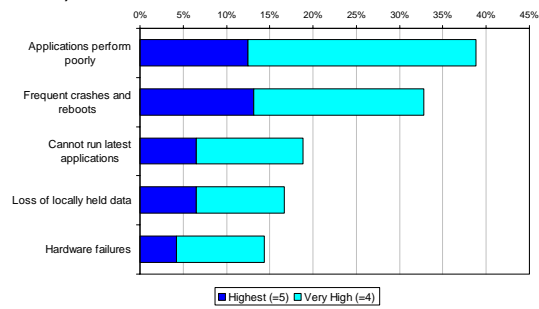
The Traditional PC Desktop

Whilst end-users might worry about loss of control and performance with SBC, the reality is that the life of a traditional PC user is far from perfect.

Top of the list of complaints is poor application performance, closely followed by instability of the Windows environment (Figure 31).

This goes hand in hand with the main reasons given for terminating the life of a PC and replacing it (Figure 32).

Figure 32

How important are the following factors in determining whether a PC should be scrapped? (1=Not important, 5=Very important)
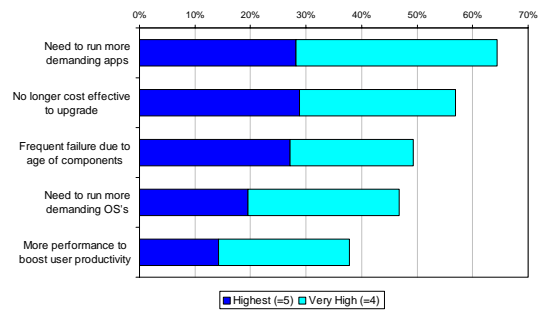
Of course much of this is driven by the relentless PC upgrade spiral, in which each new release of PC software is more complex and demanding than the one before, thus stressing existing systems, leading to hardware upgrades and ultimately, machine replacement.

Indeed, 57% of our respondents said that the impact of increasing complexity of the standard Wintel desktop environment was a concern to them (Figure 33).

Figure 33

Is the increasing complexity of the standard Wintel desktop environment a concern to you from a cost, management and support perspective?
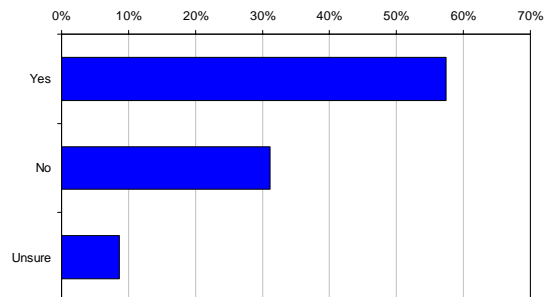
Some of this pain can be eased through the use of SBC. By running applications on the server, desktop equipment is stressed far less so the effect of the PC upgrade spiral is not as great. Taking the next step of introducing Thin Clients on the desk, however, theoretically drives even more benefit.

Introducing Thin Clients

An option for SBC users is to do away with the traditional desktop PC and replace it with a Thin Client device. Such a device is based on a locked down operating system that is designed primarily to run the user interface portion of the application and provide connectivity for peripheral devices.

One of the important benefits of a Thin Client is that it does very little in its own right. It is used as a terminal to access server based applications running over the network and is generally managed over the network also.

The theory is that implementing Thin Clients generates significant benefit by removing a great deal of the complexity and diversity from the desktop environment. There is inherently less to go wrong with Thin Clients and less for users to tamper with. There is also less to manage, maintain and support, which should reduce operational overhead.

When we look across our sample in this study, the overall penetration of Thin Clients onto the desktop was around 5% (Figure 34)

Figure 34

How does the equipment on your desktops break out across the following categories (rough percentages)?

Average distribution of devices across all of the survey sample
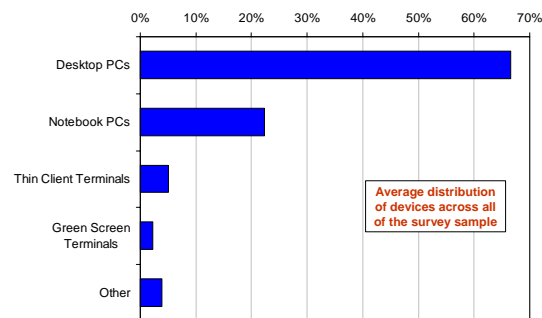
In terms of the number of organisations using Thin Client, we had 449 within our sample using the technology at varying levels (Figure 35).

Figure 35

Use of Thin Clients

Counts from a total sample of 1624 respondents
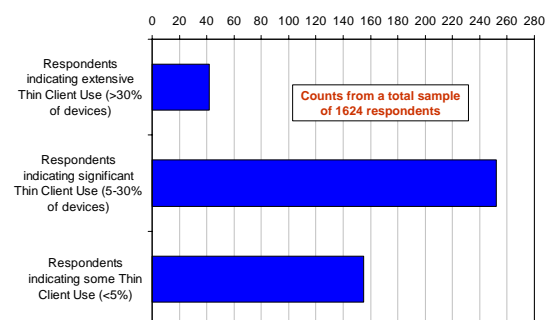
We have to be careful not to infer market shares or actual levels of penetration from these numbers as our online survey would have naturally attracted participation of proportionally more Thin Client users than non-users. Nevertheless, there is a significant enough pool of experience here to provide an informed view of the practicalities of using Thin Client technology in the real world.

Thin Client Benefits

In order to test whether the theoretical benefits of Thin Clients were real, we asked our respondents to answer the same range of questions twice – once for the traditional PC desktop and once for Thin Clients. By exploring some of the key management, support and cost related questions in this way, we were able to build up a good picture of the genuine benefit of Thin Client technology.

In the following analysis, we have taken account of the difference in size of the PC and Thin Client user bases by plotting responses as a percentage of the respondents that gave a definite answer to each question. That way, we can compare the two technologies on a like for like basis.

Management and Administration

The simplicity of Thin Clients means that it takes significantly less time and resource to deploy a new machine compared to a PC (Figure 36).

Figure 36

How many man-hours are involved in deploying a new device?
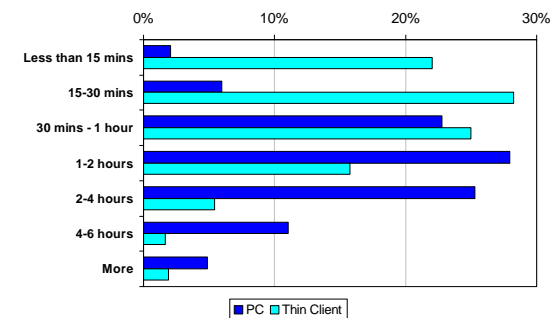
This is useful when rolling out equipment to new users, but also has a big implication on support costs and service levels. The ability to deploy quickly allows a rapid "pull and replace" approach should problems occur. As there is no application software, data or user preference information on the device itself, even the time, effort and risk of transferring the user's environment to a new machine are avoided.

At a high level, our respondents also confirm the translation of simplicity to reduced administration overhead. The vast majority (almost 80%) regard Thin Client administration as a "Minor task", whereas over 70% highlight the high overhead of managing PCs (Figure 37).

Figure 37

How would you describe the job of administering the desktop environment?
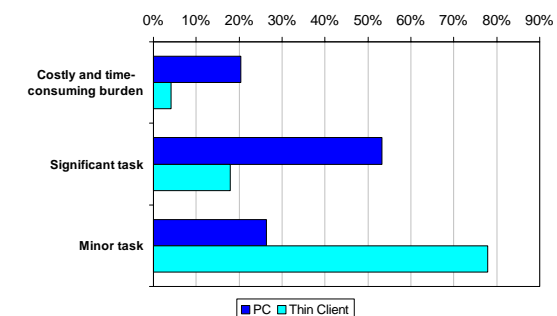
Drilling into some detail, Thin Clients go a long way towards dealing with the problem of security administration. Over ha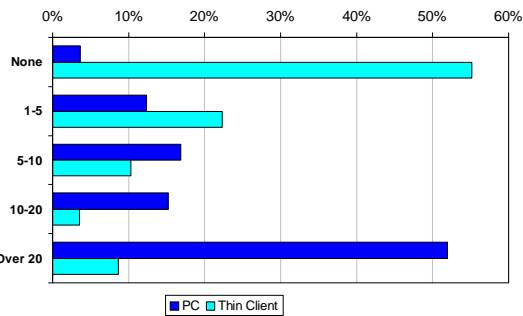lf of our respondents said they had had to apply more than 20 security patches to PCs in the past year, whereas half of Thin Client users had no need to apply any (Figure 38).

Figure 38

How many security patches have you applied in the last year?

Not surprisingly, this again translates to a significant reduction in overhead for Thin Client users (Figure 39).
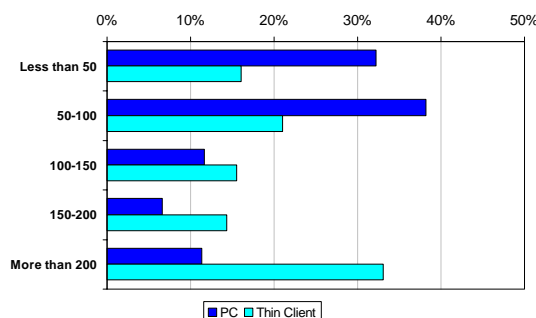
Figure 39

How would you describe the job of administering security patches for devices?
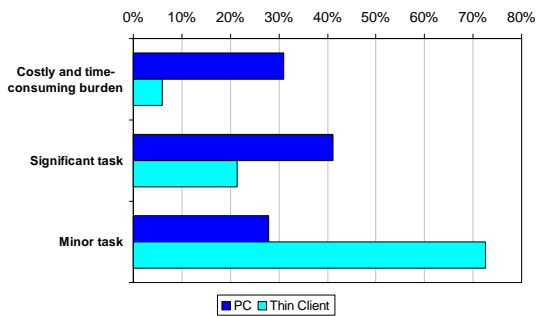
Of course this is not just about administration overhead. The more complex distributed patch administration job associated with PCs means there is more risk of individual machines being missed and security vulnerabilities opening up.

The impact of administration overhead and complexity on resource requirements is clear when we look at the number of machines a single administrator can handle (Figure 40).
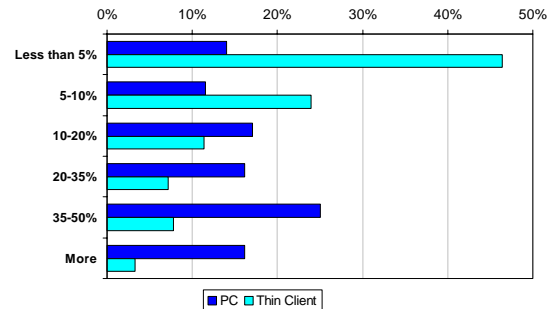
Figure 40

How many desktop devices can a single support person or administrator handle?

Support and Maintenance

Benefits in the area of support and maintenance were also confirmed. The number of support calls relating to the desktop environment is considerably more for PCs than Thin clients (Figure 41).

Figure 41

What percentage of help desk calls relate to problems with the desktop/personal computing environment itself (as opposed to core application and infrastructure issues)?

In terms of hardware, PCs are more reliable nowadays, but the results here still suggest there is a significant advantage with Thin Clients (Figure 42).

Figure 42

What percentage of devices need physical maintenance or servicing each year? (i.e. excluding software)
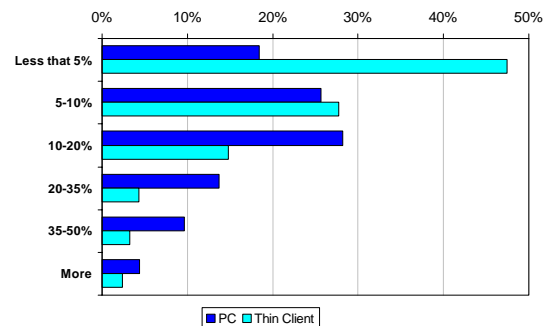
Together with less sensitivity to the PC upgrade spiral, this increase in reliability leads to a substantially longer life for Thin Client devices (Figure 43).

Figure 43

What would you estimate to be the operational lifetime of a desktop device?

Percentages relate to respondents who could give a definite answer
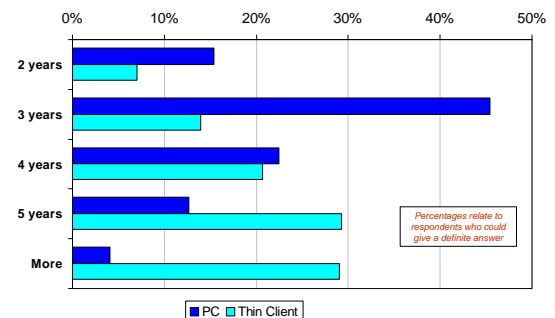
Such benefits can go straight to the bottom line in terms of sustainable cost savings over a long period of time.

Thin Client Challenges

If Thin Clients are so much more efficient, a key question is what stands in the way of organisations using them in preference to PCs, especially when the latter reach the end of their natural life.

The issues highlighted have to do with a perceived need for flexibility, inertia and perhaps a lack of experience and knowledge of the technology (Figure 44)

Figure 44

What stands in the way of you replacing retired PCs with Thin Clients? How significant are the following issues (1=Not an issue, 5=major blocker)?

On the topic of flexibility, we have to come back to the earlier question of whether this maps onto a "need" or a "want" in terms of desktop f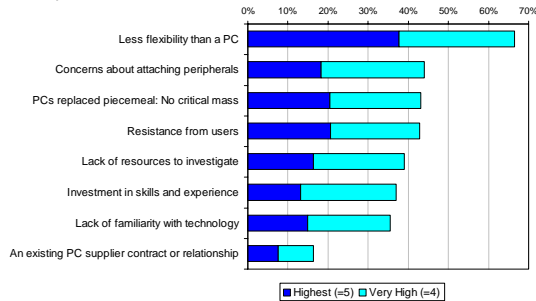acilities. This will vary between individual user communities, even within the same organisation. It is difficult, however, to argue the case for a full-blown PC on the desktop of office workers who run a limited set of mainstream applications and rarely stray from their desk.

The real problem is therefore inertia in most cases, even if the case for Thin Clients is understood. Most employees who need desktop access to business systems probably have a PC today so there is relatively little deployment of equipment going on to genuinely new users. Incurring incremental capital expenditure to replace existing equipment when it is still within its operational life will be difficult for any company to justify, even if the longer-term payback in terms of service levels and reduced operational cost is there.

The biggest challenge to those considering deployment of Thin Clients is figuring out the budgetary and procurement mechanics of replacing PCs when they reach the end of their natural life. Although 20-30% of machines are likely to need replacing in any given year, PCs are often end-of-lifed piecemeal. Pre-emptive planning of a switch to Thin Clients is therefore necessary. In the absence of such planning, inertia will continue and old PCs will just get replaced with new ones, as this is the easiest option.

If companies are to commit to the technology switch and put the necessary plans and policies in place, they need to formulate a longer-term business case that demonstrates it is worth the initial time and effort involved in doing so.
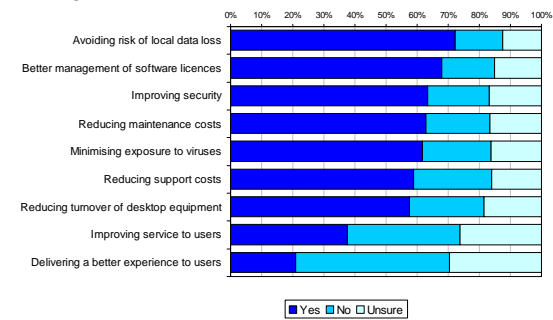
The views of respondents in this study, however, suggest that such a business case is possible.

The Overall Case for Thin Client

Thin Client users are overwhelming in their acknowledgment of overall benefits in key areas (Figure 45).

Figure 45

Do you think Thin Clients can deliver significant benefit in any of the following areas?

Furthermore, those who have committed significantly to the technology rate the benefits even higher (Figure 46).

Figure 46

Do you think Thin Clients can deliver significant benefit in any of the following areas?
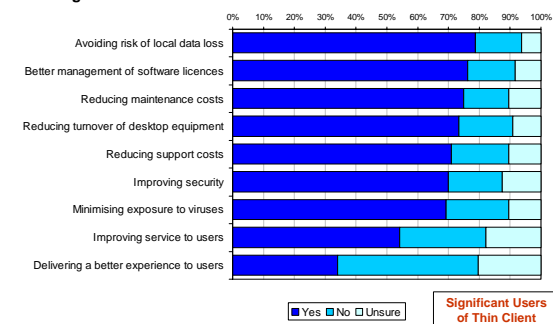
This points to a similar acceleration of benefit to that seen previously with SBC.

Thin Client Total Cost of Ownership

In terms of bottom line, almost half of the respondents in this study, including many who are not Thin Client users, agreed that the total cost of ownership for a Thin Client is less than a desktop PC (Figure 47).

Figure 47

Do you agree that the total cost of ownership of a Thin Client is less than a Desktop PC?
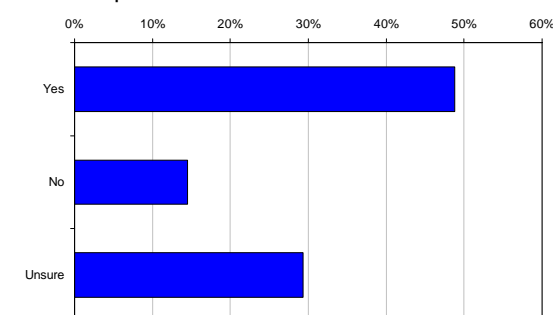
According to those who said "Yes", the savings can be substantial. Almost half estimated savings of 20% or more, with one in five indicating a cost of ownership reduction of greater than 30% (Figure 48).

Figure 48

If [you agree that the total cost of ownership of a Thin Client is less than a Desktop PC], by what percentage?

Percentages relate to those who agree that Thin Client cost of ownership is lower

Economies of scale and the acceleration of benefit with increasing use are evident here also. Half of the respondents making extensive use of Thin Client technology estimate the ongoing cost of ownership saving to be more than 30% (Figure 49).

Figure 49

If [you agree that the total cost of ownership of a Thin Client is less than a Desktop PC], by what percentage?

These findings suggest that it is better to adopt Thin Client technology aggressively than to deploy on a more casual basis.

Discussion and Conclusions

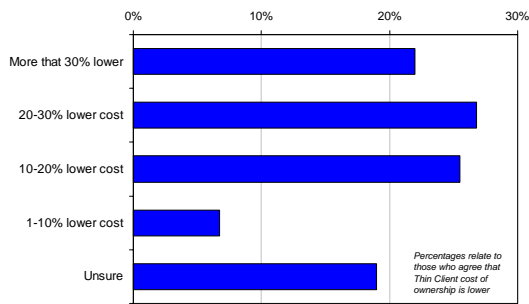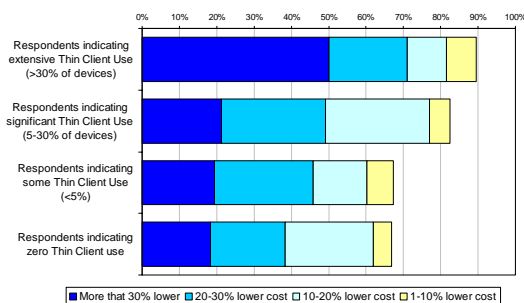Server-Based Computing (SBC) is by no means a new model for delivering IT applications. It has grown up from the host-based systems of the 1970's and 1980's, famous for their green screen and block mode character terminals, to the highly graphical incarnation we see today in Microsoft Windows Terminal Server and Citrix MetaFrame.

Some would argue that any Web application should be regarded as server based and at a high level, this is true. Most Web applications, however, are no different to many others, in that they are written with a specific type of client device in mind – typically a Windows PC running Microsoft Internet Explorer. Any administrator running a large base of PC users will vouch for the fact that this is far from a "client-less" approach. The average browser nowadays gets bloated with plug-ins and applets very quickly and represents a complex environment suffering from component dependency and incompatibility issues, as well as security vulnerabilities.

By contrast, a genuine SBC solution requires nothing more than a simple client side software component to manage the presentation, input and output. The idea is to avoid the need for any application specific code on the client beyond this, and here lies the key to unlocking many of the benefits highlighted by our respondents in this study.

A good test of whether an application truly qualifies as SBC, is to look for a "trail" or "footprint" being left by the user once they have logged off the machine. This will almost certainly be present with browser-based solutions, but with pure SBC, there should be no such trail.

Highlighting the difference between the two approaches is the fact that it is now common practice to run an Internet Explorer (IE) browser on the server for many SBC users. This allows IE based applications to be accessed from any device that supports the generic SBC client component, Windows or otherwise. This is just an example of the many-to-many-to-many "spirit" of SBC, which, in its ultimate form, aims to allow access to any application running on any operating system from any device. Most SBC solutions are not quite there yet but Citrix and VNC get pretty close.

The advantages of the SBC model mean its value should be maintained beyond the introduction of Web architectures and Web Services. This was clearly the view of our respondents in this study. Similarly, SBC vendors can be encouraged by respondents telling us that the approach is largely complementary to mobile application development and the rollout of Enterprise Applications. These are both important areas likely to receive significant funding over the next 2-3 years.

Moving beyond SBC, the feedback in this study on Thin Client technology is overwhelmingly positive. It is difficult to argue with respondents claiming significant reductions in the cost of running the desktop.

The challenges for both SBC and Thin Client are very similar, however. The view is that despite its shortcomings, the traditional PC "fat client" approach is more flexible. Added to this is the element of inertia. Making a decision to rollout the latest Windows operating system and associated application upgrades onto all of the company's (or a department's) desktops might not sound easy, but it is a known process that most have been through before. The alternative of centralising everything onto a server farm can sound inherently more radical and risky, even if the business case is convincing.

Those that have made the move are clearly reaping the benefits, however, both with SBC and Thin Client. The trick is for organisations to consider these technologies at the right time in the right context. For SBC, this might be the next phase of an application rollout, taking SAP or similar to a broader audience. For Thin Client, it might be a new call centre or a proposed upgrade of desktops or office tools across a department.

These are just examples of "triggers" that represent key review points for challenging the accepted wisdom associated with PCs. It is then a case of assessing the SBC and/or Thin Client alternative in terms of business need, IT costs, service levels and user acceptance. There are no right or wrong decisions in this area, as trade-offs need to be considered within the context of the business, operational and political environment that prevails.

Those dismissing SBC and Thin Client on the basis of perceived issues like lack of flexibility, overdue dependency on the network, etc are probably missing a trick. The strategic commitment some organisations have made and the continuing success of Microsoft and Citrix suggest such things can be worked out

In conclusion, SBC and Thin Client may not be right for all users and usage scenarios, but when they are, they pay back significantly at both the top-line and bottom-line levels.

Acknowledgements

This kind of research is crucial to all of us in the business and IT community - suppliers and customer organisations alike. We would therefore like to thank all of those participants who contributed so generously, with patience and good humour, towards a better understanding of issues in this important area of Access Infrastructure Technology.

Attachment – Survey Sample

Figure 50

Geographic Split

Other
13%

N.America
27%

Europe
60%

1624 total respondents
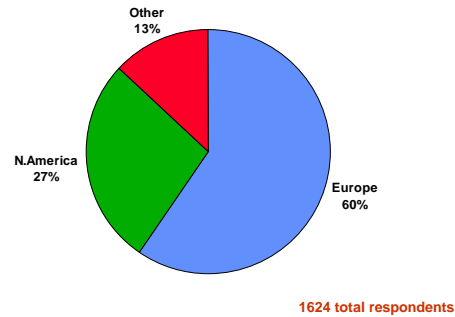
Figure 51

Split by Size of Organisation

Undeclared
1%

Tier 1 (more than
5000 employees)
26%

Tier 4 (less than 100
employees
43%

Tier 2 (1000 to 5000
employees)
11%

Tier 3 (100 to 1000
employees)
19%

1624 total respondents

Figure 52

Split by Respondent Influence

Technology
Professional
34%

Manager/Approver
34%

Recommender
32%

1624 total respondents including 304 Significant Influencers

(Approvers and Recommenders from Tier 1 and Tier 2 organisations)
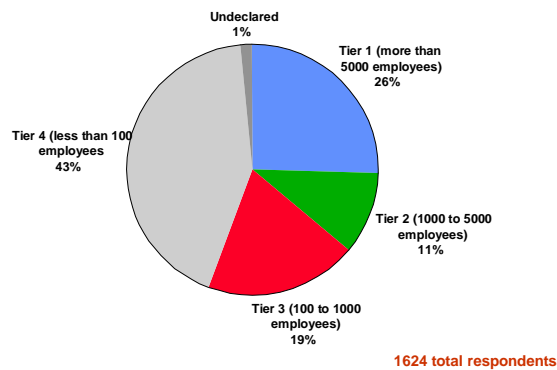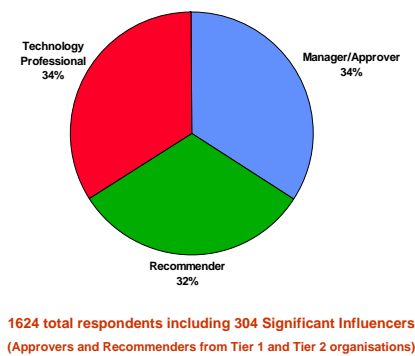
About Neoware

Neoware provides software and solutions to enable server-based computing, a computing architecture targeted at business customers that is designed to be simpler and easier than traditional PC-based computing. Neoware's software and management tools power and manage a new generation of smart thin client computing appliances that utilize the benefits of open, industry-standard technologies to create new alternatives to personal computers used in business.

Neoware's Capio, Eon, and Voyager thin client appliances are cost-effective alternatives to personal computers used by businesses and are powerful replacements for green-screen terminals and traditional PCs in the business environment. Used in conjunction with Citrix MetaFrame or Microsoft Terminal Services, Neoware's thin client appliances allow users to run virtually any application from a server, plus connect to mainframes, midrange systems, and the Internet.

Unlike personal computers, Neoware's thin client appliances can be centrally managed and remotely configured using Neoware's ezRemote Manager software, which greatly simplifies and lowers the cost of desktop administration. Because of this, Eon and Capio can save customers up to 80% of the total cost of ownership of personal computers, resulting in significant cost savings for enterprise customers and a return on up-front investment within the first year of ownership.

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About Citrix Systems

Enabling the On-Demand Enterprise

Our vision at Citrix is "to make it easy for people to access information on demand." Business depends on information. But secure, easy, instant access to enterprise information is difficult to achieve because of the growing complexity of IT, which is driving the cost of enterprise computing out of control. In fact, companies spend 80% of their IT budgets just on maintaining existing systems.

Enlightened IT organizations are moving toward an infrastructure that provides simpler ways to give their workers instant access to IT services - on demand - regardless of the underlying heterogeneity of applications, access devices and networks. At Citrix, we call this the On-Demand Enterprise.

Citrix Systems, Inc., is the global leader in access infrastructure for the on-demand enterprise and the most trusted name in enterprise access. The Citrix MetaFrame Access Suite:

- Gives workers secure, easy and instant access to enterprise applications and information from anywhere, at anytime, using any device, over any connection.

- Enables IT staff to manage heterogeneity by centrally consolidating applications and simplifying their deployment, management, monitoring and measurement.

- Ensures that the right people have access to the right resources to protect the security of enterprise information assets.

Nearly 50 million people in more than 120,000 organizations worldwide rely on the Citrix MetaFrame Access Suite to do their jobs. These organizations include the world's most successful companies - 100% of the Fortune 100, 99% of the Fortune 500, 97% of the Fortune Global 100, and 92% of the Fortune Global 500. Is your business an on-demand enterprise?

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CITRIX

About QNB Intelligence

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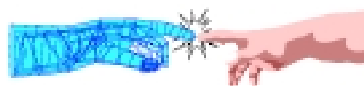
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