

WHITE PAPER

The Tangible Benefits of Blade Clients

Sponsored by: ClearCube

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IDC OPINION

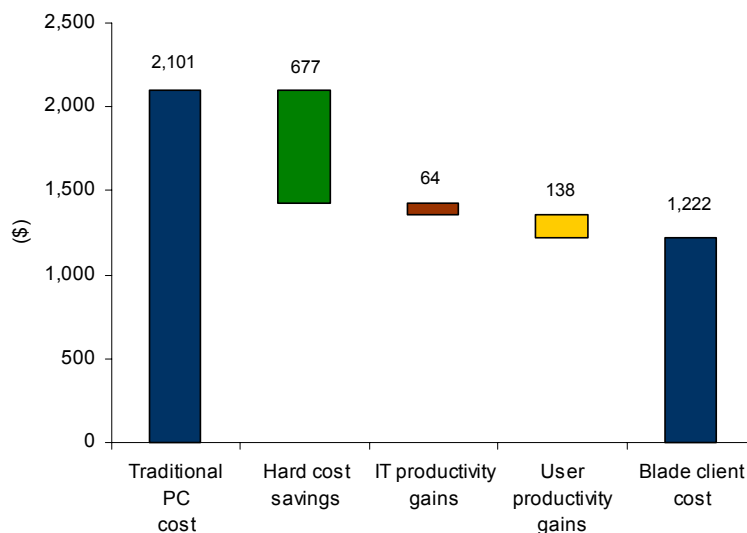
Blade clients — rackmounted boards that contain a full PC, including processor, memory, hard drive, graphics, and operating system — deliver tangible and substantive benefits for certain classes of users, notably high-density large enterprise, security-conscious military, and high-availability departmental or enterprise computing. These benefits take the form of:

- ☑ Greater physical and data security
- ☑ Higher uptime
- ☑ Better worker environment noise and thermal characteristics
- ☑ Reduced operating costs — average savings of users studied exceeded 40%.
Figure 1 illustrates the hard cost savings and productivity gains found in IDC's study of ClearCube users.

Companies with high requirements for serviceability, security, availability, or low-noise environments should consider a blade client solution for at least a part of their client population.

FIGURE 1

Average Annual Cost per User



Note: Hard cost savings include maintenance, facilities, IT staff, and security loss.

Source: IDC, 2005

METHODOLOGY

IDC interviewed 10 customers using blade solutions for their desktop computing at the end of 2004 and asked respondents to quantify the costs and benefits of using ClearCube blade clients in terms of cost savings and productivity increases. The survey also assessed customers' general satisfaction with the blade client solution.

A standard IDC business value interview and modeling methodology was used in gathering and analyzing the survey data.

The companies interviewed range in size from 100 to 1,200 employees, and four companies indicated that 100% of users have used blade clients for one to two years. A profile of the companies included in the study is shown in Table 1.

TABLE 1

Study Profile

Industries	Healthcare, government, services, and financial
Average number of employees	856
Average % of ClearCube users	26
Average number of ClearCube users	493
Average number of IT staff supporting ClearCube users	1.2

Source: IDC, 2005

SITUATION OVERVIEW

Blade clients, a variant of a standard PC, arrived on the market in 2001. Although the industry has several names for them (e.g., blade PCs and PC blades), IDC refers to a full client on a blade as a blade client. By client, we mean an end-user PC, such as a desktop or notebook, that has all the characteristics of a standalone computer (i.e., PC hardware elements, a single-user operating system, and single-user applications such as email, word processing, and spreadsheet). The blade client has all these characteristics, but it is mounted in a rack like a blade server. The blade communicates with the corporate network on the back end and with a lightweight desktop device that connects to a monitor, keyboard, mouse, speakers, and USB devices on the front end. Several blade clients are on the market today, most notably the ClearCube solution and a more recent arrival from Hewlett-Packard (HP). Although the two architectures have some similarities, they differ in important ways. This paper is not intended as a competitive analysis of the two firms' offerings, but rather it seeks to examine the category as a whole.

Blades allow companies to take computers off users' desks, embody them in blades, and centralize the blades in a secure location. The device that sits at each user's desk is either directly connected or dynamically allocated to the blade clients in the datacenter based on each user's specific needs. ClearCube has a management suite that enables a "touchless IT" environment wherein IT managers can remotely manage and control global business PC deployments without making trips to the user desktop.

Blade clients are indeed single-user systems, but that designation bears some examination. Modern operating systems such as Windows XP and Mac OS X allow multiple user accounts on the same PC. This functionality enables more than one user to share the system, but not at the same time. This type of serial sharing is rarely done, but in some corporate environments, notably telephone service pools or help desk applications, workers log off their machines at the end of a shift and new workers sit down and log in under different user names. In an analogous way, blades can be used by more than one person. For example, a worker can finish a shift in the United States, and his or her blade, still located in the central IT area, can be swung over to a shift just starting in Bangalore, India. In addition, ClearCube has software that allows a blade client to be shared simultaneously by up to four users, each of whom is under the impression that he or she has exclusive use of the system. This type of sharing enables the enterprise to significantly reduce the cost of hardware acquisition. Given the flexibility of this usage model, blade architecture does strain the definition of a client PC, but for purposes of our discussion, we will continue to treat these products as clients, using the rough assessment that if it waddles, quacks, and dives like a duck, then it must be a duck.

PC BLADE USERS — ROI ASSESSMENT

ROI Analysis

The customers in this study include hospitals, military installations, a financial institution, and a service company. Their users include professionals such as doctors, nurses, and financial analysts who need reliable information systems, and while they may be mobile, their PCs need not be. The organizations also tend to be highly centralized, so there are clear advantages to installing the clients in a single location.

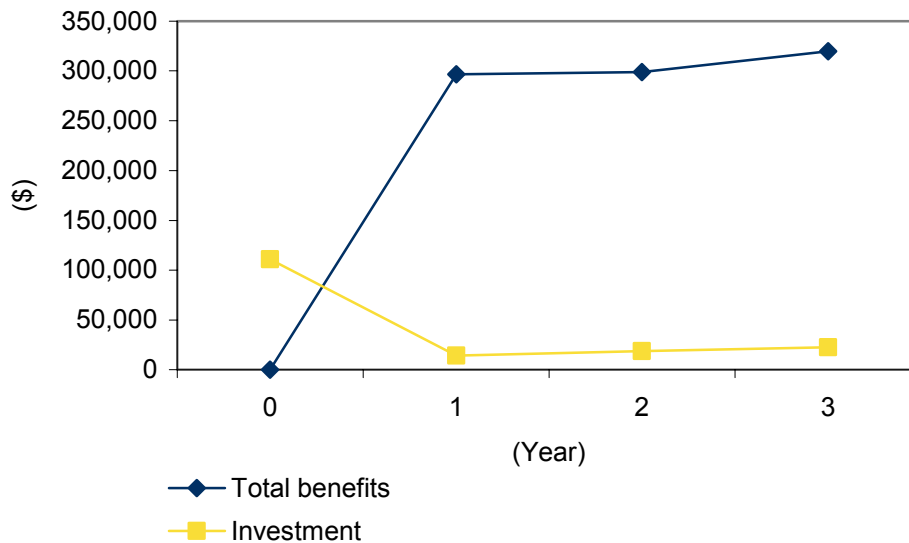
For a premium of 44% above what these companies would have paid for conventional PC assets, they were able to generate an ROI of 413% and pay back the costs in a little over 6.8 months once the blade clients solution was deployed. A summary of the ROI analysis is shown in Table 2.

TABLE 2**Three-Year Summary of ROI for ClearCube Solutions per 100 Users**

Average annual benefit	\$305,098
Investment	\$141,514
Net present value (NPV) of savings	\$584,707
ROI = NPV savings/investment	413%
Payback in months	6.81

Source: IDC, 2005

The investment or cost of change took place up front, while the benefits grew annually as each company migrated more of its users to the ClearCube platform. This drove cash flow positive in year one. Figure 2 compares the average investment and value of benefits of the companies studied.

FIGURE 2**Three-Year ROI Analysis**

Source: IDC, 2005

Benefits

IDC was able to identify multiple quantifiable benefits of deploying ClearCube blade clients based on customer interviews:

- ☒ **Reduced support costs.** By taking the hard drives out of the hands of users and consolidating those assets in protected cages inside closets/datacenters, ClearCube customers were able to support 16% more users while reducing desktop support costs by 60% and help desk costs by 13%.
- ☒ **Higher uptime.** Centralized control of the desktops enabled the IT staffs to employ proactive best practices such as integrated systems management and hot swapping to reduce outages. Companies enjoyed an average reduction in downtime of 69% as well as reduced mean time to repair (MTTR) of 36% in those rare cases of downtime. In addition to achieving lower downtime, users got up and running quicker and spent less time doing their own software deployment and troubleshooting or calling the help desk for assistance.
- ☒ **Asset security.** Locking away the systems in a controlled environment yields many benefits. The asset is protected from damage and theft. Companies in our study averaged one to two stolen PCs annually before they implemented ClearCube. Physical asset security is an important issue in colleges/schools, hospitals, and remote locations. More significantly, with the ClearCube technology and through the device on the user's desk, IT personnel can choose to enable/disable the user's ability to connect mass storage devices (e.g., floppies, CD/RW, disk on key) so that the user cannot download sensitive data or upload unauthorized software. In certain sensitive government/military situations, users no longer have to secure their hard drives to a safe/lockbox when they are not in use, which is a significant operational benefit.
- ☒ **Working environment.** With the PC heat source and attendant fans out of the workplace, users enjoy a cooler, quieter, more spacious working environment. Some of the companies reduced their space requirements by an average 25%. One hospital felt that eliminating the fans reduced the risks of spreading germs.

As shown in Table 3, total benefits over the three years averaged \$915,293, with \$401,768 (44%) coming from hard cost savings (e.g., IT efficiency, facilities, PC security, and equipment).

TABLE 3

Three-Year Benefits per 100 Users

IT efficiency	\$156,320
Facilities (space, HVAC, storage)	\$131,250
PC security	\$563
Equipment savings	\$113,635
IT productivity	\$161,501
User productivity	\$175,772
Revenue	\$176,252
Total savings	\$915,293

Source: IDC, 2005

Reduction in the Total Costs of Desktop Computing

Despite the higher initial cost for the blades form factor and the one-time investment for cages, racks, and ports, blade clients tend to have lower total costs when viewed from three or four years out. Lower hard costs resulted in average annual savings of \$133,922 (per 100 users) for the companies interviewed and meant that they could recover their higher initial costs in as little as 13 months on hard-dollar (IT budget) savings alone without considering the increased productivity and downtime reduction benefits. Reduced total cost of ownership was the result of the following factors:

1. Consolidation, control, and centralization

- Removing desktops from the workplace reduced facilities costs for space, HVAC, security, and electrical by 25%.
- The ratio of users to systems varied in our study; for example, each user in a highly technical classified environment has three to five PCs, whereas five users at a multishift nurses' station use a single PC. On average, blade clients were able to serve 24% more users than conventional PCs.

2. Increased security

- Most companies in the study averaged one to two stolen PCs per year. Losses due to theft were reduced to zero once blades were deployed.

3. Improved IT efficiency

- ❑ While growing their user bases by 13% per year, these companies were able to reduce their desktop support staffs by 60%. In some cases, the companies simply reallocated resources to other functions and thus avoided the costs of additional hires.

4. Taking PCs out of users' hands

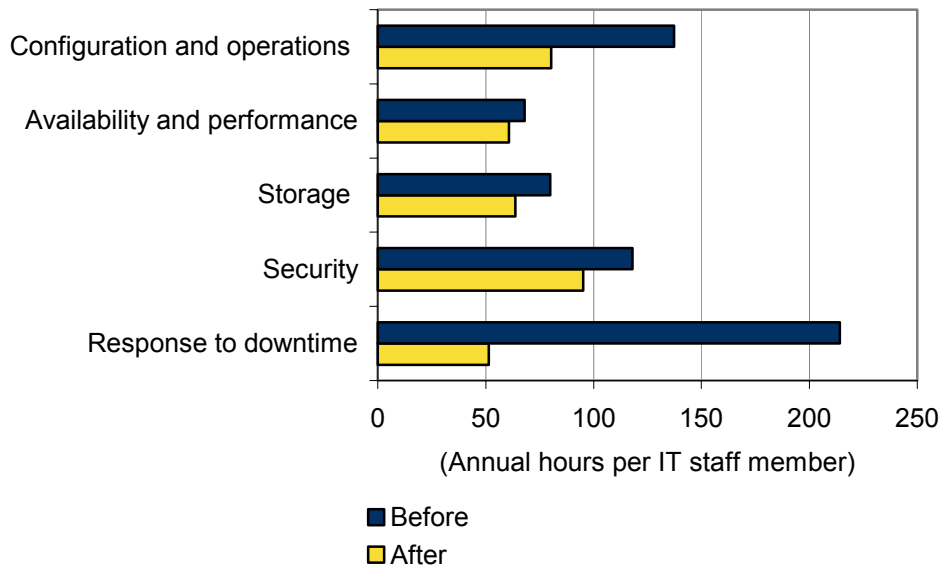
- ❑ Removing workers' desktops reduced maintenance costs associated with routine and catastrophic wear and tear.

Productivity – IT Staff

Not only do blade clients require fewer staff in direct support of users, but the time required for all IT tasks associated with desktops is reduced by nearly 28%. The time freed up amounted to an average of 248 hours per IT staff per year to be used in more proactive business support activities. Figure 3 illustrates staff time savings by comparing time spent on tasks before and after the ClearCube installation. IT staff benefited most from reducing the time spent fixing downtime issues. The largest bucket of hours saved from routine operations came in security functions such as user administration and securing hardware assets. The greatest reductions in time in terms of percentage came in configuration and operations tasks such as desktop software installation and job scheduling, which were cut in half.

FIGURE 3

IT Time Spent on Desktop Support Before and After ClearCube Implementation



Source: IDC, 2005

User Productivity – Friendly, Functional, and Flexible

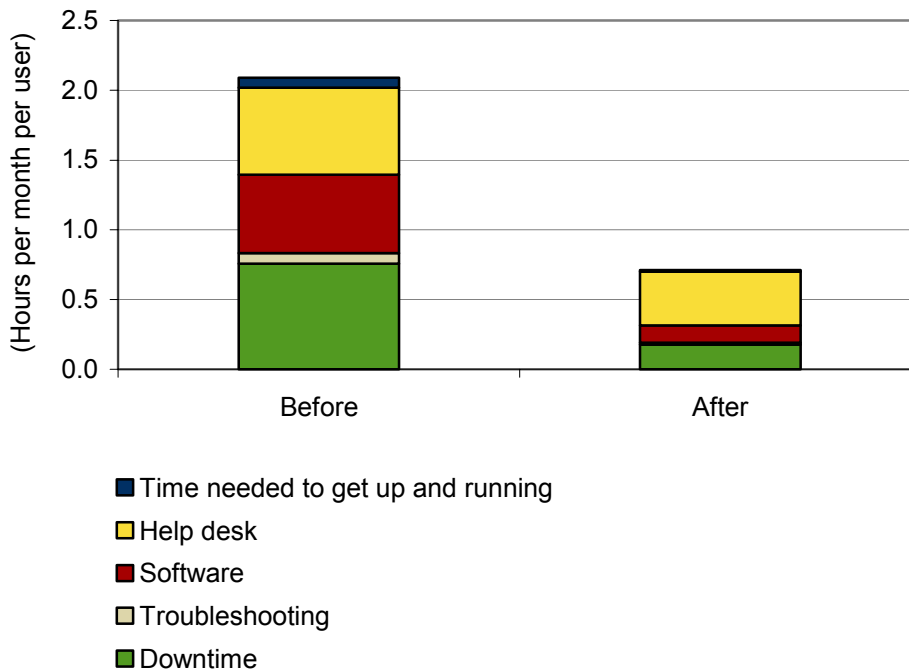
One of the key measures of user productivity is the time that users have access to the applications they need to do their jobs. Every hour without access is only 80% productive, and so 20% of the hourly wage is wasted. The ClearCube solutions contributed to higher levels of productivity by significantly reducing the barriers between users and applications:

- ☒ Centralization helped the IT staff to configure and install each desktop 40% quicker, which saved each user 2.2 hours getting up and running.
- ☒ Users also spent 0.5 fewer hours per month loading their own software and troubleshooting.
- ☒ Help desk calls dropped off by 35% as users recovered 0.24 hours per month through better operations.
- ☒ Downtime reductions returned 3.5 hours per year of productive time to each user.

Figure 4 illustrates user productivity savings by comparing time lost per month dealing with IT problems before and after the ClearCube installation.

FIGURE 4

Lost User Productivity Before and After ClearCube Implementation



Source: IDC, 2005

Revenue Savings

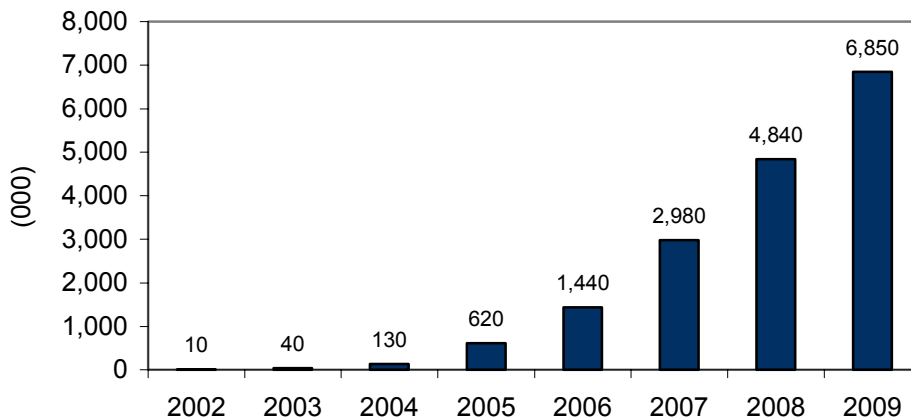
The companies studied reduced downtime by 69% to an average of 1.8 hours per month following their ClearCube implementations. This reduction resulted in savings after tax revenue of \$58,751 per 100 users per year, based on hourly downtime loss rates reported by the companies.

FUTURE OUTLOOK

Blade clients are currently shipping in low volumes. IDC's tracking team pegs the entire industry as shipping in the range of 10,000 units per month. These volumes are fairly modest for the moment, but we expect them to rise steadily over the next few years, hitting a nearly 7 million annual run rate by 2009 or between 2% to 3% of the overall client PC market (see Figure 5).

FIGURE 5

Worldwide Blade Client Shipments, 2002–2009



Source: IDC, 2005

Of course, growth rates are high now, coming off a low base, but we expect the rates to continue in the triple digits through 2007 and then maintain healthy double digits in the later years as a volume market is established. This forecast is based on the following assumptions:

- The benefits of the technology (e.g., security, availability, manageability, and cost savings) are substantial and can be realized by a wide range of organizations.
- The price premium for the technology over comparable "vanilla" solutions will diminish over time.
- A growing network of OEMs and distributors is adopting blade technology for specialized customers.

- ☒ New entrants will increase visibility and volume of blade solutions.
- ☒ IT managers will continue to value their familiarity with basic PC architecture.

CHALLENGES/OPPORTUNITIES

Thin clients are among the solutions that compete with blade clients. It is quite possible that some firms, by the time they are convinced of the benefits of centralizing critical resources, will come to the conclusion that the best choice is to go all the way to a thin client/server architecture, assessing that many of the same benefits accrue to both blade clients and thin clients. Although in some instances a thin-client solution may be more reliable and stable, building a redundant server environment to accommodate thin clients may increase total costs. The key arguments in favor of blade clients is that thin clients may not meet the needs of users who require high availability and dedicated bandwidth. Often, thin-client solutions require IT departments to deploy yet another type of computer for high-end users. Additionally, thin clients require that the server and network side do a lot of housekeeping, such as graphics rendering and pixel painting, normally done locally by clients. IT managers will have to assess whether their network and server performance would be negatively affected by all this low-value traffic.

CONCLUSION

Blade clients, in addition to providing significant increases in security, availability, and manageability, can reduce desktop operating costs by 40% based on customer analysis. The technology, while not for everybody, will serve a specialized role in client computing for the foreseeable future. Companies with high requirements for serviceability, security, availability, or low-noise environments should consider a blade client solution for at least a part of their end-user computing needs.

APPENDIX

IDC's ROI Methodology

IDC has developed an ROI methodology that measures the total costs of deployment and the sum of the savings achieved. The methodology calculates the ROI in a three-step process:

1. **Ascertain the investment** made in the purchase and implementation of the solution and the associated training and maintenance costs. To get an accurate assessment, IDC asked for the deployment, setup, upgrade, and maintenance costs, as well as the total cost of the software and training.
2. **Measure the gains** in IT staff and user productivity from deploying the solution, revenue recaptured from reduced downtime, and cost savings from increased IT staff efficiency and lower capital and operating expenses. Even in the full business case, most of the savings were hard-dollar savings and only a small fraction would be considered soft savings.

- ❑ **IT staff productivity** indicates how effectively IT managers and their staffs use their time. Besides reducing operations costs, gains in IT productivity can free up staff to implement new initiatives more rapidly, helping to create a competitive edge. Providing the productivity boost required to grow the business while keeping the IT staff headcount level flat is considered a hard savings area because only a fraction of the overall time saved by the team is counted toward a hard ROI result.
- ❑ **User productivity** is increasingly dependent on service uptime as organizations become progressively more network-centric. When users are unable to access network resources, their productivity may be severely impaired. User productivity also suffers when employees have to wait for help desk support or other IT administrative tasks. Because users often are able to move to other business applications when service interruptions or performance degradations occur, only a small fraction of the potential user impact time is counted toward the final ROI result.
- ❑ **Recaptured revenue.** Higher service availability also contributes to a business' top lines because less revenue is lost due to downtime and potential service penalties are avoided. Additionally, downtime can be costly in terms of diminished customer satisfaction and possible loss of a customer's business.
- ❑ **Cost savings.** IT staff efficiency is a measure of how well the IT management organization can achieve economies of scale and scope of work with its people, tools, and practices. To remain competitive, companies must be able to grow their systems and networks at a faster rate than the IT staff required to support them. Skilled IT professionals continue to be scarce; therefore, companies are expecting existing staff to take on more work and responsibilities. Because improved IT staff efficiency reduces payroll costs, the savings are hard savings. Other hard savings include cost reductions from lower travel expenditures and from reduced spending on hardware, software, communications, and facilities.

3. **Calculate the payback period and ROI for the deployed solution.** From the results of the interviews, IDC was able to calculate the average payback period and rate of return from investing in ClearCube client blades, as well as the net present value of the savings. IDC also calculated a separate hard ROI using the hard savings and excluding the soft savings from improved IT staff and user productivity.

IDC bases its calculations on a number of assumptions:

- ☒ Time values are multiplied by burdened salary (salary + 40% for benefits and overhead) to quantify efficiency and manager productivity savings.
- ☒ Downtime values are a product of the number of hours of downtime multiplied by the number of users affected.
- ☒ The impact of unplanned downtime is quantified in terms of impaired end-user productivity and lost revenue.

- ☒ Lost productivity is a product of downtime multiplied by burdened salary.
- ☒ Lost revenue is a product of downtime multiplied by the average revenue generated per hour.

The net present value of the three-year savings is calculated by subtracting the amount that would have been realized by investing the original sum in an instrument yielding a 12% return to allow for the missed opportunity cost. Because every hour of downtime does not equate to a lost hour of productivity or revenue generation, IDC attributes only a fraction of the result to savings. As part of our survey, we asked each company what fraction of downtime hours to use in calculating productivity savings and the reduction in lost revenue. We then tax the revenue at that rate.

Further, because IT solutions require a deployment period, the full benefits of the solution are not available during deployment. To capture this reality, IDC prorates the benefits on a monthly basis, then subtracts the deployment time from the first-year savings.

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