

WHITE PAPER

The Tangible Benefits of Blade Computing

Sponsored by: ClearCube

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IDC OPINION

Blade clients—rack mounted 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:

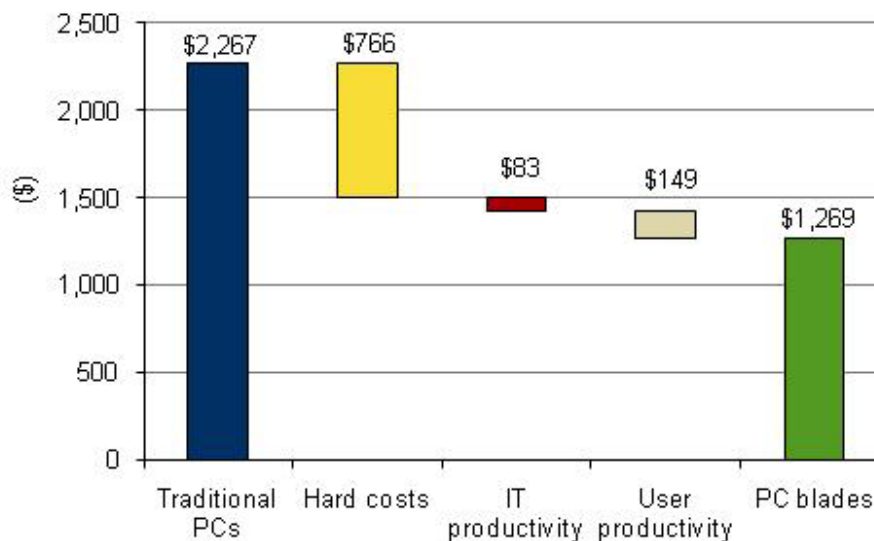
- ☒ Greater physical and data security
- ☒ Higher uptime
- ☒ Better worker environment noise and thermal characteristics
- ☒ Reduced operating costs.

For the companies examined in our study, the deployment of a blade computing solution resulted in a net cost reduction of \$988 per user (see Figure 1).

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 Costs per User



Source: IDC, 2010

METHODOLOGY

The data in this study comes from 12 in-depth interviews with customers currently using blade solutions for their desktop computing. IDC asked respondents questions to quantify the benefits to them in terms of cost savings and productivity increases of using ClearCube blade clients. 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 ranged in size from 100 to 1,200 employees with four companies having 100% of users using blade clients for 1-2 years (see Table 1).

TABLE 1

Study Profile

Industries Healthcare,	Government, Services, Financial
Average number of Employees	798
Average % of ClearCube users	46%
Average number of ClearCube users per IT manager	207
Blades to server ratio	13.5

Source: IDC, 2010

SITUATION OVERVIEW

The blade client model removes the PC from the desktop and places it securely in the data center, accessed by simple hardware that sits on a user's physical desktop. This approach offers the end user the computing power of a full-featured PC, while providing the IT department with the data security and system accessibility typically reserved for thin-client models.

While this basic 1:1 ratio of one client computing device per person drove the blade client market in the early years, savvy blade client vendors have in recent years capitalized on the growing interest in virtualization to grow their business. For example, using virtualization a single blade client can host several separate virtual desktop clients, with the users of those clients perceiving no difference in performance despite the fact that multiple people are sharing one real-world PC. Utilizing blade clients in such a manner not only cuts down on the initial per-seat client cost, but it can significantly cut the cost of maintaining such systems over time.

PC Blade Users – ROI Assessment

ROI Analysis

The customers in this study included hospitals, military installations, financial institutions and service companies. 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 above what they would have paid for conventional PC assets, these companies were able to generate an ROI of 450% and pay back the costs in a little over 6.17 months once the blade clients solution was deployed (see Table 2).

TABLE 2

3-Year Summary of ROI for ClearCube Solutions (per 100 users)

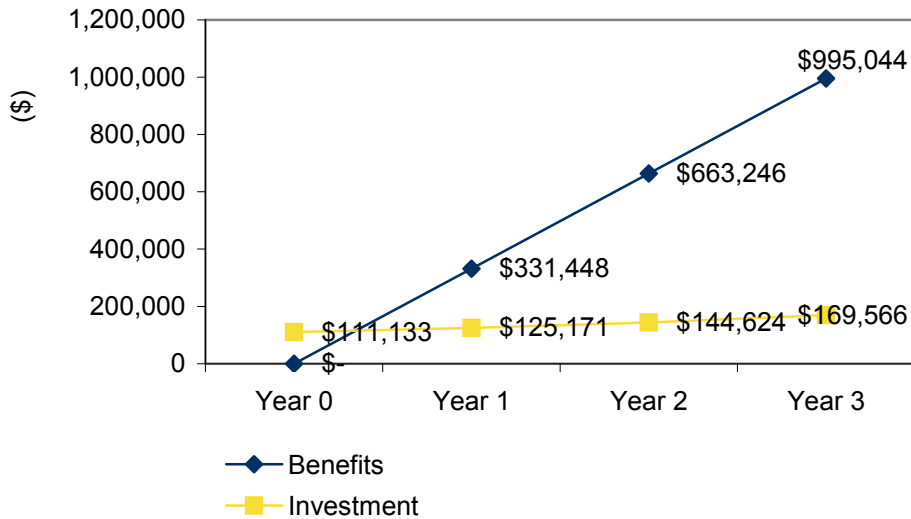
Discounted Benefits	\$808,933
Discounted Investment	\$147,086
Net Present Value	\$661,847
ROI = NPV/Investment	450%
Payback in months	6.17

Source: IDC, 2010

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 (see Figure 2).

FIGURE 2

Cash Flow Analysis



Source: IDC, 2010

Benefits

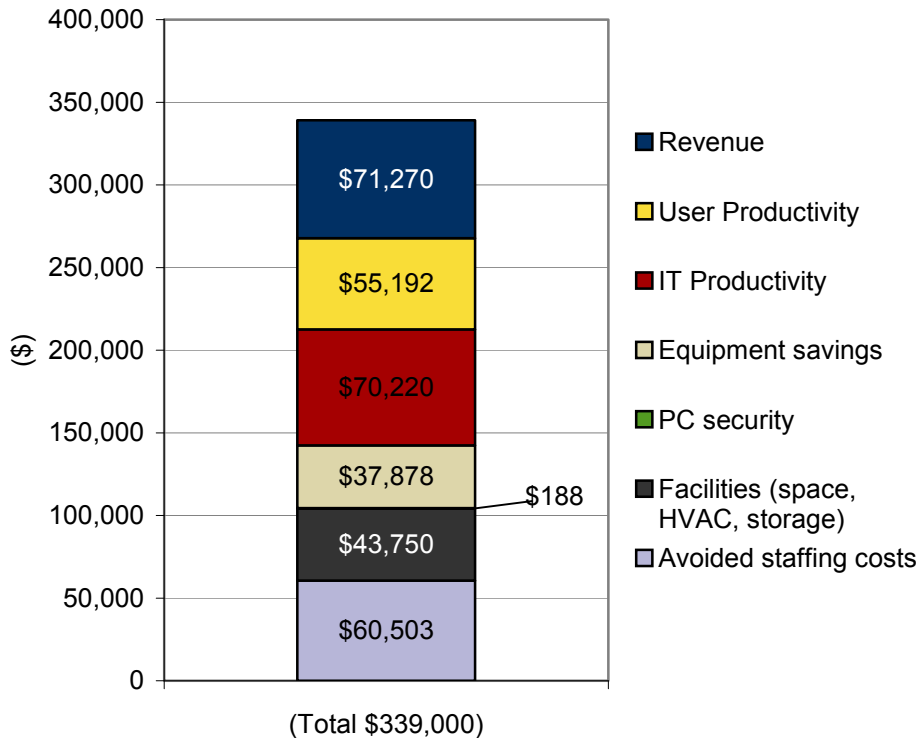
IDC was able to identify multiple quantifiable benefits of deploying ClearCube blade clients based on the customer interviews:

- ☒ Reduced support costs – By taking the hard drives out of the hands of users and consolidating those assets in protected cages inside closets/data centers, ClearCube customers were able to support 16% more users while reducing desktop support costs by 60% and helpdesk costs by 13%;
- ☒ Higher uptime – Centralized control of the desktops enabled the IT staffs to employ proactive best practices for reducing outages such as integrated systems management and hot swapping. Companies enjoyed an average reduction in downtime of 6.9% as well as reduced Mean Time to Repair (MTTR) of 36% in those rare cases of downtime. In addition to lower downtime, users got up and running quicker and spent less time doing their own software deployment and troubleshooting or calling the helpdesk 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, through the device on the user's desk, IT personnel can choose to enable/disable the user's ability to connect mass storage devices (floppies, CD/RW, disk-on-key) so users can not 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 not in use, a significant operational benefit...

☒ Working environment – With the PC heat source and attendant fans out of the work place, users enjoyed a cooler, quieter, more spacious working environment. Some of the companies were able to reduce their space requirements by an average 2.5%. One hospital felt that eliminating the fans reduced the risks of spreading germs.

FIGURE 3

Average Annual Benefits per 100 Users



Source: IDC, 2010

A total annual benefit (per 100 users) is \$ 339,000 with 42% coming from hard costs savings (see Figure 3).

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 \$142,319 (per 100 users) and meant that companies 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 results of the following factors:

1. Consolidation, control and centralization -

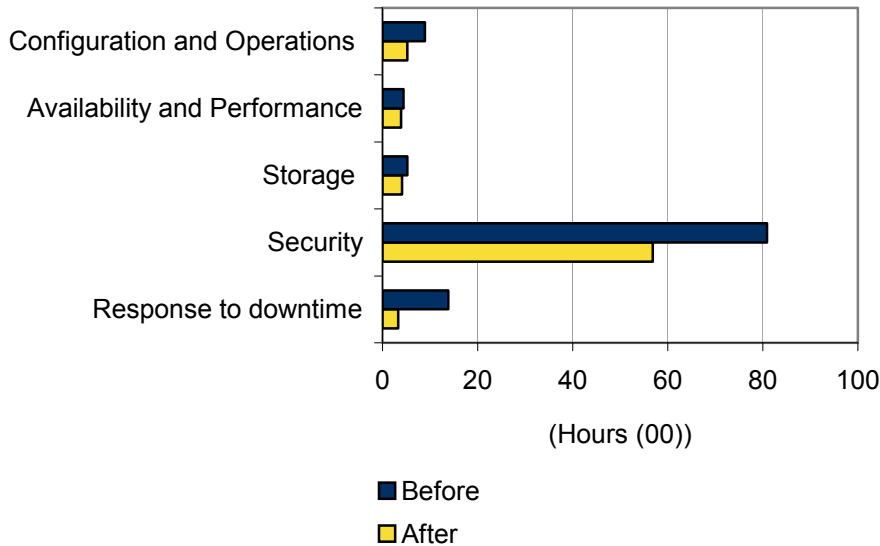
- ❑ Removing desktops from the workplace reduced facilities costs for space, HVAC, security, and electrical by 25%.
 - ❑ The ratio of users to systems varied in our study from each user having 3-5 PCs in highly technical classified environments to a single PC supporting 5 users in a multi-shift nurses station. On average, blade clients were able to serve 24% more users than conventional PCs.
 - ❑ Security – Most companies in the study experienced 1-2 PCs per year being stolen from the workplace. Losses due to theft were reduced to zero once blades were deployed.
 - ❑ IT efficiency – While growing their user base by 13% per year these companies were able to reduce their desktop support staff by 60%. In some cases this was a simple re-allocation of resources to other functions which avoided the costs of additional hires.
2. Out of their hands – Removing desktops from the workers reduced maintenance costs associated with routine and catastrophic wear and tear.

Productivity –IT staff

Not only do the 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% (see Figure 4). 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. While 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 4

IT Task Reduction Time (Hours per User per Year)



Source: IDC, 2010

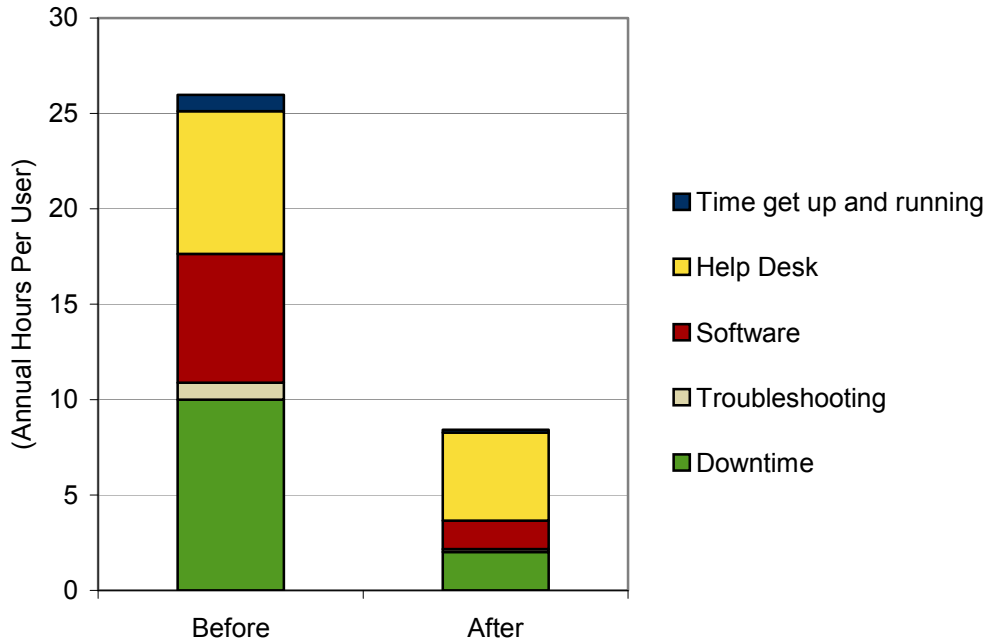
User Productivity - Out of their hands –Friendly, Functional and Flexible

One of the key measures of user productivity is the time that users have access to the applications they need to do their job. 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 user and application (see Figure 5).

- ☒ Centralization helped the IT staff to configure and install each desktop 42% quicker which saved each user 2.2 hours getting up and running;
- ☒ Users also spent 5.25 fewer hours per year loading their own software and troubleshooting;
- ☒ Help desk calls dropped off by 38% as users recovered 2.86 hours per year through better operations.
- ☒ Downtime reductions returned 8 hours per year of productive time to each user.

FIGURE 5

User Productivity - Reductions in Non-Productive (Annual hours per user)



Source: IDC, 2010

Revenue Savings

Following Cle arCube implementations, downtime at the companies studied was reduced by 69% to an average of 1.8 hours per month. This resulted in net revenue (gross revenue minus costs to generate the revenue) savings of \$ 71,270 per 100 users per year, based on hourly downtime loss rates reported by the companies.

FUTURE OUTLOOK

Blade clients currently ship in low volumes in comparison to desktop PCs. The blade client architecture is well established in some key vertical markets such as government and health care that value the technology's inherent strengths. While proponents of blade clients in these verticals may not purchase in volumes high enough to make waves within the PC industry, their continued patronage insures a stable shipment base for years to come. Innovations in the blade clients that drive down the cost and integrate with virtual desktop solutions could facilitate the growth curve in this segment. Add to this the increasing visibility of virtualization, and the blade client's strengths in this area, and you have a market with a solid future.

CHALLENGES/OPPORTUNITIES

The largest challenge facing the blade client market is the continued growth of the thin client market. This market showed notable resilience during the economic downturn, and IDC expects strong shipment growth in the next few years as an increasing percentage of corporations warm to the thin client model. There's an argument to be made that the growth of thin clients can actually help drive the growth of blade clients, as within any organization there will always be users who require greater computing capacity than the average thin client can provide. Instead of rolling out standalone PCs for these employees (and enduring the resulting hassles), an IT department might consider a rack of high-performing blade PCs. Such a scenario allows IT to retain a greater degree of control, provides these employees with the computing power they need, and leaves open the possibility of virtualizing the blade PCs down the road if necessary.

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 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 staff 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 growing 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.
 - ☒ **Lost 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 only 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 revenues.
- ❑ 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, and then subtracts the deployment time from the first-year savings.

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