EXECUTIVE SUMMARY

IDC conducted in-depth interviews with seven enterprises that have recently initiated a technology refresh of their Unix server storage and operating environment. The interviews provided valuable insight into the customers’ reasons for modernizing their IT infrastructure and the benefits associated with both consolidation and virtualization. Reviewing these practices yielded a large amount of quantitative data that IDC entered into its return-on-investment (ROI) analysis. This IDC White Paper looks at the specific business values associated with partnering with Oracle to support these consolidation efforts. The paper also examines how using Oracle systems and applications further reduced costs.

By refreshing and optimizing server and storage technology, organizations in this study were able to realize the following benefits:

☑ Gain a more powerful and reliable infrastructure while achieving an aggregate financial benefit of $91,466 per 100 users

☑ Optimize IT support by enabling IT staff to more proactively manage IT infrastructure and reduce time spent responding to problems and dealing with infrastructure complexities

☑ Derive quantifiable end-user productivity gains by providing higher service levels and faster response times

☑ Mitigate the risks associated with service downtime by up to 99%, enabling more productive business operations

SITUATION OVERVIEW

By 2016, IDC expects the Unix server market and the Unix storage market to reach $11.6 billion and $10.6 billion, respectively, as corporations continue to build IT infrastructure capacity to enable their organizations to expand IT usage and capacity requirements. IDC notes that in recent years, corporations upgraded and
transformed their older servers to newer platforms that offered an opportunity to both virtualize and consolidate their server footprints. Currently, customers in the Unix ecosystem have also been investing in other applications and tools, such as IT cloud infrastructure, virtualization, and analytics, to improve performance of their existing resources. In spite of the sluggish worldwide economic factors, the growing requirement for faster and more agile IT capabilities to support the changing dynamics of globalization and mobility continues to fuel IT investment. Organizations have to constantly spend on IT infrastructure to keep up with the rapidly changing demands of an "always-on" user base.

Typically, after the organizations in this study replaced older servers and storage devices, the new products were positioned as the platform to transform their datacenters and improve operational efficiency. The survey responses of the IT managers consistently showed that one of the biggest criticisms of older platforms was the low utilization rate of the devices. After the upgrades to faster, more feature-rich server and storage technology and virtualization deployment, the efficiency and utilization improved significantly. This reduction in costs allowed the IT managers to invest in other resources and redeploy IT staff to higher-value tasks.

For most companies, unforeseen or uncontrollable increases in the costs of IT systems are not acceptable, especially during times when companies need to tightly control capital and operating expenses. Senior IT executives must reduce spending on IT equipment and administrative resources, and a key strategy to facilitate these efforts is the consolidation of IT assets to ensure optimal use as requirements grow.

Technologies such as server virtualization — which allow IT departments to consolidate proliferating physical hardware assets, boost server utilization levels, and be more responsive to new business requirements — are seen as key to improving IT asset utilization. However, advancing IT operational efficiency through consolidation is not a one-time effort. As companies’ reliance on IT continues to expand, the resources required to sustain the business can quickly begin to erode margins and inhibit future growth. Clients are seeking solutions to the complexities associated with inefficiencies due to server and storage sprawl, but they are also looking for solutions that will reduce the complexities and costs that have become associated with virtual machine (VM) sprawl. These concerns about VM sprawl are another reason that technology refresh must be seen as an ongoing, iterative process. Keys to a successful integration are:

- **Use of standards.** Streamlining operations and improving operational metrics (heating, cooling, etc.) helped improve the operating environment.

- **Server upgrade.** Upgrading to new servers and updated operating systems dramatically reduced the number of outages and led to dramatic increases in uptime and efficiency. Much of this improved efficiency may be attributed to the integrated virtualization capabilities of Oracle’s latest server and storage platforms.

- **Better utilization of IT personnel.** Improvements in this area helped optimize staff resources, enabling the shifting of IT staff resources from dealing with unplanned outages and emergency calls to focusing on new projects and growing data needs.
Virtualized storage solutions. Reliance on inefficient and inflexible storage can quickly erase savings from server upgrades and virtualization. Products such as those provided by Oracle improve storage asset utilization and reduce IT administrative overhead while improving service/application provisioning rates. They also make it easier to boost application performance through the use of new technologies such as solid state storage.

Enhanced security technologies. Security is a critical requirement to address the ever-increasing volume of online threats. The Oracle Solaris operating environment and SPARC-based servers provide integrated security and RAS capabilities to advance this protection.

Common Infrastructure Challenges

IDC spoke with seven large firms about challenges within their IT environments and about the success of their latest technology refresh. Overall, the respondents were very positive about the savings in both time and personnel that the technology upgrade provided.

The following quotes from the survey respondents highlight the successes they achieved when they moved to the new Oracle platform:

- Improved productivity. “User impact? Much more productive. They were ecstatic. 30% increase in productivity, or more. They were having outages constantly.”

- Server consolidation. “Just moving to Containers [now called Solaris Zones], it will minimize requirements around buying more and more hardware. If you look at these new SPARC T4 servers, what we've been finding is things like...even on a system that has 20 Solaris Zones on it, 70GB of the memory is free. So what that means is that we could potentially put 40 Solaris Zones on a physical server and still not be overloading that server. Looking forward, it reduces the amount of server spend tremendously.”

- Storage consolidation. “But my expectation is that this [installing Pillar storage] should save us somewhere in the neighborhood of 20–30% in the kind of spend that we would have to continue with if we were just buying physical disk.”

- Reduced overhead. "When you look at all of the overheads involved in the day-to-day activities, along with the resource use...like disk space, etc., we have dropped those averages by better than 50% across the board. But at the same time, [we have] been able to take on new business without necessarily increasing headcount.”

- Fast, quantifiable ROI. "The payback was less than 18 months. We are easily saving $1 million a year. I would say between $1 million and $2 million a year. And that includes labor and the ability to deliver rapidly.”
- **Reduced capital expenses.** "Capex impact? Absolutely. As the compute power of the machines that we're refreshing has dramatically increased, we're buying fewer servers to deploy more virtual machines."

- **Fewer unplanned outages.** "Downtime? The new architecture is more reliable and has better performance; [unplanned] events: zero hours."

## DISCUSSION OF ORACLE'S SOLUTION

The Unix server market is moving from a broad market — including volume, midrange, and high-end servers — into a value-oriented market with Unix servers supporting business-critical and mission-critical workloads, especially in the business processing and decision support workload categories. The established "core" of the Unix server market remains line-of-business applications (e.g., ERP, CRM); scalable database; and mission-critical workloads that need uptime of 4-9s or better. Unix customers continue to migrate further up the value chain toward the midrange and high-end configurations as their demands for more performance grow.

Since Oracle acquired Sun Microsystems in January 2010, the integration of Sun's installed base into the Oracle family has generated positive results. One of the key drivers of this success is the execution of Oracle's plan to simplify IT by reducing the inherent complexity. The goal is to provide better performance, reliability, and security, which reduces the risk of IT implementation and management. Oracle acquired the industry-leading Solaris operating system and the SPARC CMT (chip multithreading) technology when it bought Sun Microsystems; since then, Oracle has refined the T-Series servers, moving from SPARC T3 to SPARC T4 designs and then mapping out the future SPARC T5 processor. In our view, the T4 processor announcement was an important step toward making the SPARC T-Series into general-purpose processors that are more broadly used within the enterprise and that complement Oracle's high-end M-Series SPARC servers as well as its NAS- and SAN-based storage products.

Sun's loyal installed customer base bought into the Oracle product road map and understood that staying with Oracle would give it access to the larger Oracle ecosystem. Embarking on this transition from older server and storage technology to newer platforms provided many benefits to the Sun installed base, and the IT datacenter managers who we interviewed offered similar testimony. Consolidating older platforms onto the newer SPARC servers and staying with Oracle Solaris improved productivity, reduced downtime, and reduced overall capital and operating costs.

## BUSINESS VALUE

### Study Demographics

In spring 2012, IDC interviewed seven organizations that had initiated technology refreshes over the past 6 to 24 months. The organizations ranged from medium-sized companies with as few as 500 employees to larger enterprises with as many as 93,000 employees. The organizations interviewed are based in North America,
Latin America, Asia/Pacific, and Europe, the Middle East, and Africa (EMEA), including representatives from retail, service provider, manufacturing, management services, and technology market segments. The interviews were designed to elicit both quantifiable information and anecdotes so that IDC could interpret the full impact of the technology refresh on the organization. Table 1 offers an aggregated profile of the complete infrastructure for the companies interviewed.

**TABLE 1**

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td></td>
</tr>
<tr>
<td>Employees</td>
<td>48,186</td>
</tr>
<tr>
<td>IT staff</td>
<td>450</td>
</tr>
<tr>
<td>Unix servers</td>
<td>103.3</td>
</tr>
<tr>
<td>Images virtualized</td>
<td>67%</td>
</tr>
<tr>
<td>Storage</td>
<td>393TB</td>
</tr>
<tr>
<td>Annual storage growth</td>
<td>43%</td>
</tr>
<tr>
<td>Industries</td>
<td>Retail, service provider, technology, manufacturing, management services</td>
</tr>
<tr>
<td>Geographies</td>
<td>North America; Latin America; Europe, the Middle East, and Africa (EMEA); Asia/Pacific</td>
</tr>
</tbody>
</table>

Source: IDC, 2012

All seven organizations were replacing their compute platforms with new systems and working with Oracle to identify which elements of the hardware and the software stack to target. Many of the interviewees were also refreshing their networking and storage technology beyond what was needed to support the change in compute infrastructure.

**FINANCIAL BENEFITS ANALYSIS**

The organizations in the study elected to refresh their technology as a vehicle for initiating IT transformation projects that could not be conducted on their older platforms. From the interviews, IDC found that organizations in this study achieved financial benefits in four areas: IT infrastructure cost reduction, IT staff productivity improvement, increased application end-user productivity, and reduction in lost revenue due to downtime. As Figure 1 shows, the aggregate financial benefit in this study is $91,466 per 100 end users per year from the following areas:
- **Reduced IT infrastructure costs.** Organizations in the study used technology refresh to optimize their compute, storage, and networking resources, consolidating and virtualizing their server operating environments for annual savings of $34,953 per 100 users.

- **Optimized IT staff productivity.** Through standardization and greatly reducing maintenance requirements, organizations were able to enhance their ability to proactively manage their IT infrastructure and reduce time wasted in responding to service failures. IT staffs devoted to IT operations are now more productive, saving $10,108 per 100 users annually.

- **Enhanced end-user productivity.** The most impactful benefit comes from reducing unplanned service outages, thereby providing high reliability. Higher availability resulting from fewer service disruptions and quicker response saved $38,013 per 100 users annually.

- **Business benefits.** The refreshed technology provided more computing power with greater reliability, enabling some of the organizations to increase their volume of business without adding resources, generating an additional $8,392 per 100 users annually in profits.

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### FIGURE 1

**Average Annual Benefits per 100 Users**

Total = $91,466

- Business benefit $8,392
- IT staff productivity $10,108
- Downtime/user productivity $38,013
- Cost reduction $34,953

Source: IDC, 2012
All of the organizations in our study were implementing some type of server architecture reconfiguration involving server consolidation and/or virtualization or cloud initiatives in tandem with their technology refresh. These companies were able to consolidate their server environments by 53% and virtualize 67% of the refreshed servers.

Through technology refresh, organizations in this study have lowered their annual IT infrastructure costs by an average of $34,953 per 100 users (see Figure 2). These savings stem from the following key areas:

- **Server hardware.** By refreshing aged servers with new technology, organizations were able to greatly increase performance and increase their application load without adding servers. In addition, the organizations were able to virtualize 67% of their server environments, which they could not have achieved with their old servers. Interviewees estimated they avoided having to grow their server footprint by an average of 38%, saving $15,867 per 100 users.

- **Storage hardware.** On average, demand for data capacity is increasing by 43% per year, so storage benefits are generally based on some delay in purchasing new storage and on establishing a more efficient storage footprint to support future data growth. Some of the companies incorporated Oracle’s engineered systems such as SPARC SuperClusters into their strategy. These systems have embedded storage, which obviated the need for external storage and the requirements to invest in additional Fibre Channel and associated hardware. On average, companies in the study are saving $1,093 per 100 users in additional storage hardware costs.

- **Network hardware.** By reducing the number of physical servers, companies reduced the number of ports required, saving $2,956 per 100 users.

- **Management tools.** By using the native tools of refreshed servers, some organizations saved an average of $232 per 100 users in software licenses.

- **Facilities/power.** Improvements in facilities/power enabled organizations to save $910 per 100 users annually.

- **Support/maintenance.** Organizations reduced annual support and maintenance, saving $4,433 per 100 users.

- **Avoided operational costs.** A more powerful and scalable compute platform with a more flexible, consolidated footprint enabled organizations to support growing operations (data, applications, users) without adding IT staff, saving $9,462 per 100 users.
FIGURE 2

Annual Infrastructure Benefits per 100 Users

Total = $34,953

- Tools: $15,867
- Facilities/power: $9,462
- Server hardware: $4,433
- Network hardware: $2,956
- Support/maintenance: $1,093
- Avoided operational costs: $232

Source: IDC, 2012
**IT Staff Efficiency**

By refreshing aged infrastructure with more powerful, more reliable standardized systems and at the same time consolidating and virtualizing their compute environment, the organizations in the study were able to optimize their IT staff resources, saving $10,108 per 100 users annually. The source of the savings comes from freeing up staff resources in three areas:

- **Reducing the time associated with server downtime.** Replacing the older systems and rearchitecting server environments resulted in an 89% reduction in downtime incidents. Standardizing on a common platform has helped reduce the mean time to repair (MTTR) by 87% because when downtime does occur, the fixes are more readily apparent. Overall, the time spent dealing with downtime was reduced by 99%.

- **Reducing help desk time.** Issues not quite reaching the severity of service outages were reduced by 72%. As one participant said, “IT is more productive now, too. They can focus more on...we’ll call it...the different styles of tickets. In other words...we’re not trying to fix the environment to be able to handle the tickets; we’re just handling the tickets. The whole workflow has been modified because of it.”

- **Reducing the time for administrative tasks.** Consolidating on standardized and virtualized platforms running a common software stack means fewer physical systems to support and less complexity in supporting operating system (OS) and application software. One example noted is provisioning: "The server folks will save time with the server refresh. There again, there are some capabilities for thin provisioning there. Tear up, tear down...these kinds of functions are going to take fractions of the amount of time...a lot of database work. I would think that from a time perspective, from request to deployment, that we can talk about doing that in days versus months. We couldn’t have done this virtualization on the old machines because the compute power wasn’t there."

As a result, companies were able to reduce administrative staff hours by 70%. Figure 3 shows the tasks most impacted.

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**FIGURE 3**

**IT Staff Productivity Benefits (FTEs)**

<table>
<thead>
<tr>
<th>Task</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning/purchasing servers</td>
<td>25</td>
</tr>
<tr>
<td>Patching and managing</td>
<td>50</td>
</tr>
<tr>
<td>Managing applications</td>
<td>59</td>
</tr>
<tr>
<td>Moves, adds, changes</td>
<td>75</td>
</tr>
<tr>
<td>Installing servers/instances</td>
<td>90</td>
</tr>
<tr>
<td>Repairing servers</td>
<td>98</td>
</tr>
</tbody>
</table>

Source: IDC, 2012
The critical business benefit derived by optimizing staff resources is that it enables the companies to shift their most valuable IT staff resources from dealing with unplanned outages, emergency calls, and day-to-day "keeping the lights on" administrative tasks to supporting new projects and growing data needs.

**User Productivity**

The most significant savings in this study was in improving the business operations of the organizations by creating a more powerful and reliable service platform less prone to unplanned downtime. As shown in Table 2, total downtime hours per user per year were reduced by 98% and help desk calls were reduced by 72%. The combined savings amounts to 56 hours per user per year, which is the equivalent of increasing user productivity by 2–3%.

**TABLE 2**

**User Productivity KPIs**

<table>
<thead>
<tr>
<th></th>
<th>Before</th>
<th>After</th>
<th>Savings</th>
<th>% Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of incidents per month</td>
<td>7.70</td>
<td>0.85</td>
<td>6.85</td>
<td>89</td>
</tr>
<tr>
<td>Average downtime duration (hours)</td>
<td>2.60</td>
<td>0.32</td>
<td>2.28</td>
<td>88</td>
</tr>
<tr>
<td>Percentage of users impacted</td>
<td>40</td>
<td>10</td>
<td>30</td>
<td>99</td>
</tr>
<tr>
<td>Downtime hours per user per year</td>
<td>34.24</td>
<td>0.52</td>
<td>33.72</td>
<td>98</td>
</tr>
<tr>
<td>Annual hours lost per user (help desk)</td>
<td>6.72</td>
<td>1.87</td>
<td>4.86</td>
<td>72</td>
</tr>
</tbody>
</table>

Source: IDC, 2012

Increased user productivity accounted for $38,103 per 100 users or 42% of total benefits.
Business Benefits

Business benefits were impacted by using technology refresh to create a more powerful and more reliable operations platform. As one company stated, "Improving our server operating environment eliminated IT as a constraint to the business growth."

Not all the companies measured or documented a direct impact on their revenue as a result of their technology refresh. However, three of the seven companies, all manufacturers, were able to articulate the impact to top-line growth:

- A manufacturer with its own retail distribution reported that fairly significant unplanned downtime had disrupted operations, causing production delays, and although it could catch up, it needed to work additional hours to avoid revenue delays.

- Another manufacturer benefited from more reliable CRM operations. Before the refresh, it suffered periodic service outages that caused orders to be dropped or delays in shipping that resulted in lost sales. After the refresh, downtime has dropped to zero.

- One company described that as a result of refreshing to a more powerful environment, it was able to speed up its application performance, allowing it to accommodate business growth without increasing overhead. This company actually improved its operating margins.

IDC combined the revenue savings of the companies that recognized revenue impact with companies that did not to create an aggregate average. We then converted the revenue to operating profit by multiplying the stated margin. In this way, we combined the resulting profit with the cost savings from the other benefit categories. The net contribution to annual benefits was $8,392 per 100 users.
**ROI ANALYSIS**

IDC looks at the cash flows of the financial benefits compared with the investment or total costs of the IT initiatives over a three-year time period to assess the ROI. The initial investment included the average total costs to purchase and deploy the new systems, which includes hardware and software purchase; consulting and other third-party services required to architect and install the new systems; the costs and lost productivity associated with IT training; and the IT labor required for installation and migration of applications. Annual costs are for support and upgrades. Annual benefits include infrastructure savings, reduced IT labor support, increased end user productivity, and added income.

**Cash Flow Analysis**

Figure 4 shows the undiscounted cash flow analysis. Organizations in this study made an initial investment of $37,967 per 100 users, which included the purchase and implementation costs for consulting services and the IT labor required for deployment and for training. Based on that investment, the organizations realized average annual benefits of $74,561 per 100 users. Over a three-year period, each company saw cumulative net savings of $173,761 per 100 users.

**FIGURE 4**

Cash Flow Analysis per 100 Users

![Cash Flow Analysis Diagram](source: IDC, 2012)
Table 3 constitutes a three-year view of the financial impact of technology refresh per 100 users. IDC uses a 12% cost of capital to discount cash flows.

The three-year ROI analysis shows that on average, the organizations in this study spent $47,538 (discounted) per 100 users on technology refresh and received $174,255 (discounted) per 100 users in benefits for a net present value (NPV) of $126,717. NPV ($126,717) is the net difference of the discounted benefit and the investment and is $47,044 less than the cumulative cash flow in Figure 4. The companies saw a payback in less than 13 months (after deployment) and an ROI of 267%.

<table>
<thead>
<tr>
<th>TABLE 3</th>
</tr>
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<tbody>
<tr>
<td><strong>Three-Year ROI Analysis per 100 Users</strong></td>
</tr>
<tr>
<td>Benefit (discounted)</td>
</tr>
<tr>
<td>Investment (discounted)</td>
</tr>
<tr>
<td>Net present value (NPV)</td>
</tr>
<tr>
<td>Return on investment (ROI)</td>
</tr>
<tr>
<td>Payback</td>
</tr>
<tr>
<td>Discount rate</td>
</tr>
</tbody>
</table>

Source: IDC, 2012

**FINAL THOUGHTS**

**The Cost of Doing Nothing**

IDC research indicates that customers are often not only risk averse but also change averse. This theme is often exacerbated in challenging economic times and leads customers to defer equipment acquisitions rather than make any changes to the status quo. This cycle of deferment often leads to waiting to make improvements until the need is critical — often because of equipment failures or outages or because the operating cost model becomes unsustainable.

The organizations that participated in this study reflected a current industry trend for many companies to extend their traditional refresh cycles. As a result, their average annual cost to maintain and support the technology outstripped the cost to replace the technology. In particular, as compute systems passed the 3- to 4-year-old mark, their costs began to accelerate significantly. Both IT labor costs and user productivity costs are growing year to year, compounding overall costs. IT labor costs jumped by 20–25% during the fourth year of ownership and an additional 25–30% in the fifth year of ownership. User productivity costs suffered as well, with a 20–25% jump in the fourth year and an additional 35–40% jump in cost during year five. A direct comparison of
year five and year 2 indicates that combined IT labor costs and user productivity costs were a remarkable 70–75% higher. In this study, the average age of replaced systems was 5.5 years.

**CONCLUSION**

The purpose of this research was to gather real-world technology management insights from a cross section of enterprise-class IT organizations that had upgraded their Unix infrastructure with the latest generation of Oracle solutions. The findings are starkly clear:

- Based on a three-year discounted cash flow analysis, the organizations examined in this study spent $47,538 (discounted) per 100 users on a technology refresh that yielded $174,255 (discounted) per 100 users in benefits — an NPV of $126,717. The companies saw a payback in less than 13 months (after deployment) and an **ROI of 267%**.

- These benefits were realized across four domains:

  - **Reduced IT infrastructure costs** generated 38.2% of benefits realized as a result of higher average utilization.
  
  - **Enhanced end-user productivity** generated 41.6% of benefits realized by reducing unplanned service outages.
  
  - **Optimized IT staff productivity** generated 11.1% of the benefits realized and were achieved through standardization, reduced maintenance requirements, and less time wasted responding to service failures.
  
  - **Business benefits** generated 9.1% of the benefits realized by enabling some of the organizations to increase their volume of business without adding resources.

- This project conclusively demonstrates that systematically renewing Unix infrastructure is an extremely effective technology management strategy that improves IT asset utilization, staff productivity, and business readiness to serve.

  - From an IT operational perspective, it moves the IT team from event-driven, reactive situations of coping with the latest problem to a more proactive, forward-facing operational posture. The focus becomes one of preemptive quality assurance, standardization, and optimization — a significant contrast to the “preinvestment” state.

  - Business leaders and IT executives continue to struggle with how to best deploy their scarce resources. Many evaluate the current situation guided by recent operational experience and project forward. While they acknowledge the financial and operational benefits to investing in new devices, they often try to stretch deployed equipment “another year or so” in hopes that it won’t deleteriously affect the organization.
This research shows that the optimum server life cycle is typically three to four years and that the costs to maintain IT infrastructure beyond this increase in a nonlinear fashion with material cost impacts to the business in terms of inability to support projects, downtime and operational disruption, and unsustainable operating cost increases.

The critical learning for executives contemplating the renewal of an aging IT infrastructure is to recognize the fallacy of projecting recent experience into the near future. These research findings show the real material costs associated with extending a deployed infrastructure "just another year." This research presents business leaders with the opportunity to use the experiences of the seven organizations, which graciously shared their stories, to inform the internal process evaluation within their companies — avoiding having to relearn these lessons from personal experience.

APPENDIX

IDC utilized its standard ROI methodology for this project. This methodology is based on gathering data from current users of the technology as the foundation for the model. Based on these interviews, IDC performs a three-step process to calculate the ROI and payback period:

1. Measure the savings from reduced IT costs (staff, hardware, software, maintenance, and IT support), increased user productivity, and improved revenue over the term of the deployment.
2. Ascertain the investment made in deploying the solution and the associated training and support costs.
3. Project the costs and savings over a three-year period and calculate the ROI and payback for the deployed solution.

IDC uses the net present value (NPV) of the savings and increased revenue over three years in calculating the ROI and payback period for the deployment. The NPV of the savings is determined by subtracting the amount that would have been earned by investing the original sum in an instrument yielding a 12% return (to allow for the missed opportunity cost that could have been realized using that capital).

IDC bases the payback period and ROI calculations on a number of assumptions, which are summarized below:

1. Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and manager productivity savings.
2. Downtime values are a product of the number of hours of downtime multiplied by the number of users affected.
3. The impact of unplanned downtime is quantified in terms of impaired end-user productivity and lost revenue.
4. Lost productivity is a product of downtime multiplied by burdened salary.
5. Lost revenue is a product of downtime multiplied by the average revenue generated per hour.

6. The NPV 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. This accounts for both the assumed cost of money and the assumed rate of return.

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 assessment, we asked each company what fraction of downtime hours to use in calculating productivity savings and the reduction in lost revenue. IDC then taxes 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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