

WHITE PAPER

The Sun Certification and Team Performance: The Impact on System Administrators

Sponsored by: Sun

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IDC OPINION

CIOs and IT managers demand an integrated approach to business continuity, fault-resistant and high-availability architecture designs, a reduction in unplanned downtime, and vastly increased business agility that allows companies to better address emerging market opportunities quickly.

The speed of new technology introduction, compounded by ever-changing standards, has escalated the need for IT organizations to have a highly skilled and well-prepared workforce. Sufficient team skill associated with deploying, managing, and repairing a technology or solution maximizes the benefits organizations receive from their technologies, including fully leveraging embedded solution capabilities, reducing time to deploy solutions, and ensuring maximum functionality. IDC believes that better-skilled system administrators are more likely to deliver greater value from the systems they administer to meet business objectives.

Key findings from a global IDC research study of 75 IT teams responsible for system administration include:

- ☒ Meaningful concentrations of certified system administrators increase the achievement of significant operational metrics, including efficient management of corporate servers, network and server availability, and meeting service commitments.
- ☒ Improvement in team skill level, as measured by certifications, is directly correlated with increased organizational performance in key system administration metrics.
- ☒ Teams with 50% of members certified on relevant Sun technologies and processes perform at the top tier of operational performance.
- ☒ Every increase in certified staff improves performance in each metric reviewed.
- ☒ Training, and ultimately certification, is critical to improving overall IT performance.

SITUATION OVERVIEW

Worldwide IT organizations spent about \$77 billion on system software and tools in 2007. CIOs and IT managers are seeking an integrated approach to business continuity, fault-resistant and high-availability architecture designs, a reduction in unplanned downtime, and vastly increased business agility that allows their companies to better address emerging market opportunities quickly. They are challenged in this search by increasingly complex infrastructure environments that include increasingly complex IP-enabled network traffic; more pervasive, high-availability middleware; lights-out datacenter management; increased deployments of high-performance and scalable database workloads; and scale-up and scale-out deployments of networked computers.

At the same time, virtualization and "live migration" are being embraced by enterprises as useful and important elements of improving high availability for their complex environments. The implementation of live migration continues to improve and become more widely adopted so that workloads can be moved between resources, with no perceptible interruption for end users. Additionally, the current version of ITIL (ITIL v3) focuses on continuous improvement, which in turn is forcing a focus on improving the service delivered to an individual user.

These changes, and many more, make the datacenter more complex, heterogeneous, and more difficult to manage. The speed of these changes, compounded by ever-changing standards, has escalated the need for IT organizations to have a highly skilled and well-prepared workforce. Sufficient team skill associated with deploying, managing, and repairing a technology or solution maximizes the benefits organizations receive from their technologies, including fully leveraging embedded solution capabilities, reducing time to deploy solutions, and ensuring maximum functionality. To achieve value from their infrastructure investments, IT managers cautiously select the most appropriate technology, hire the most affordable and experienced consultants, and use sophisticated management practices to ensure functional success. IDC believes that the talent of the IT team is often overlooked as the critical element of IT organizational performance. Team skill dramatically impacts the value IT organizations get from their technology improvements.

Historically, there has been little research that attempts to describe the impact of certification on specific system administration metrics. Based on a global research study of 75 IT teams responsible for system administration, this white paper identifies several performance metrics for system administrators and compares the performance of teams with various concentrations of certifications.

The research revealed the strong link between certification, training, and organizational achievement of these system administration metrics. What is clear from this research is that well-trained teams perform demonstrably better than underskilled teams and that performance results in measurable improvement in productivity. Typically, teams that are well trained in best practices in system administration disciplines are more likely to meet deployment objectives and use efficient management practices than their less prepared counterparts.

Metrics Matter

IT managers drive performance based on examination of a number of key operating metrics. This white paper focuses on the performance of the system administration function, an area whose business value is directly correlated with training and certification.

Overview of Performance Metrics

In a recent study of 75 global IT teams, IDC assessed performance against key process metrics. These metrics were chosen based on prior IDC research wherein IT managers identified their key performance indicators.

System administration activities are primarily about ensuring reliability. Of primary importance to reliability is the "repeatability" of a given performance metric. To the extent possible, repeatability is a combination of consistent and documented standards and procedures, and the automation of routine or predictable tasks. Achievement of reliability can be observed at many points within a system administrator's environment. We have chosen to examine the five performance metrics listed in Table 1.

Table 1 shows the level of performance achieved by system administration teams. Each metric is represented by a frequency of achievement; for example, the first metric should be read as follows:

For the average system administration team, the network is available for all significant business functions 84% of the time.

TABLE 1

Selected Process Performance Metrics: System Administration

Performance Metric	Average Performance
% of time the network is available for all significant business functions	84
% of time that critical servers are available	83
% of corporate servers that are centrally managed	77
% of service commitments deployed on time	76
% of unscheduled outages repaired in less than one hour	56

n = 75

Source: IDC's Certification Impact Study, 2008

Performance against these measures indicates average performance is inconsistently reliable. Both critical servers and full network functionality are available only 83% and 84% of the time on average, respectively. This implies that critical systems may be unavailable for up to six hours each workweek. In most industries and for most job functions, this level of availability is unacceptable. At the same time, only 75% of network components are in compliance with security policy and requirements — suggesting poor documentation, poor oversight, or even poor automation of installation or implementation activities.

This survey also found that business function objectives are frequently delayed because IT delivers only 76% of its system administration service commitments on time.

On a more positive note, 77% of corporate servers are centrally managed — allowing for centralized, automated, and consistently applied standards of management and performance. While only 23% of corporate servers are not centrally managed, the decentralized management of those servers creates inconsistency and decreased efficiency and requires increased effort.

Of somewhat ambiguous meaning in these results is that about 60% of unscheduled outages are repaired in less than one hour. This seems like a good success rate, until we remember that critical servers are available only 83% of the time. Each of those "sub-one-hour" repair activities contributes to the 17% downtime critical servers experience. More effective system administration could prevent those "sub-one-hour" failures altogether, and the availability of those critical servers would increase.

Certifications Impact Team Skill Level and Control of IT Risk

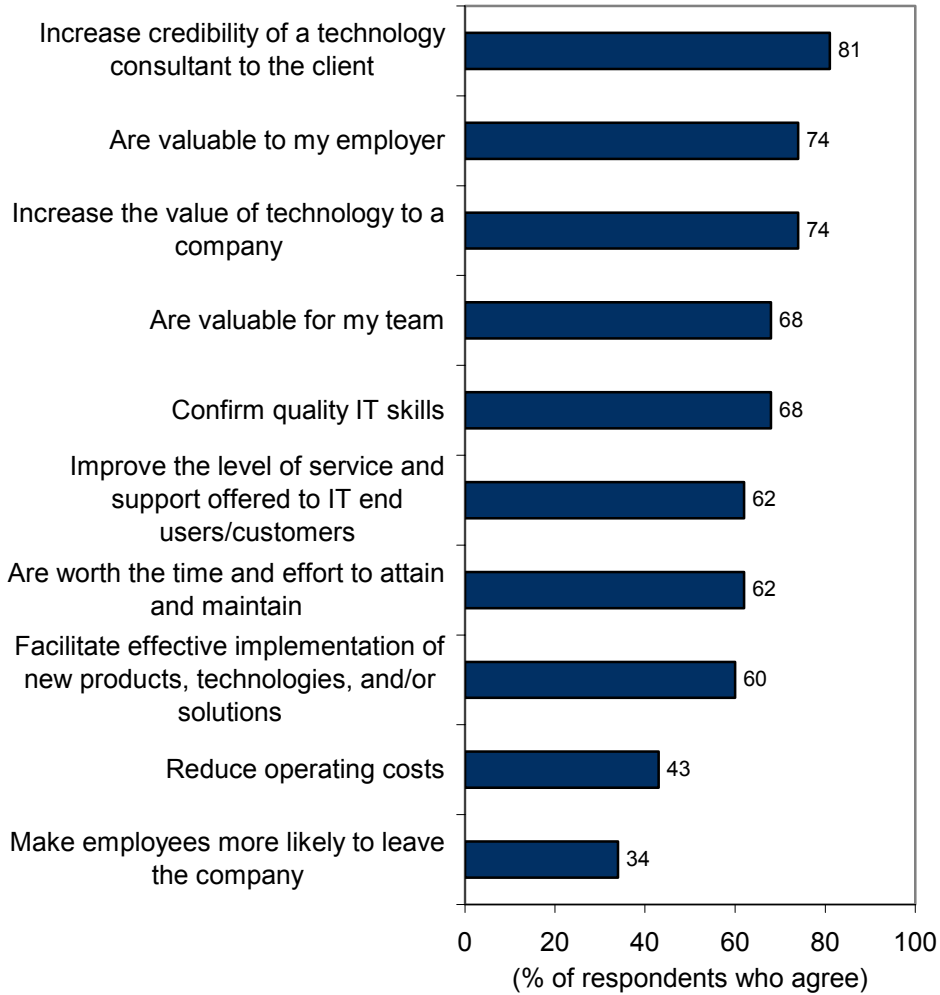
Other IDC research has found that achieving superior service levels in system administration is impacted by a number of factors, including turnover, motivation, installed technology, experience, training, and certification. We find that of these factors, training and certification have the most significant impact. Consequently, well-trained and certified teams derive more benefit from their technology investments than undertrained teams. When teams are sufficiently trained, their functional performance dramatically improves. The best way to ensure that training is understood and can be applied on the job is through a relevant, rigorous certification.

IT department heads believe that certifications improve the value of a technology to a company and confirm the skills of a team member. Certifications also have a high value to both the team and the enterprise itself (see Figure 1).

FIGURE 1

Impact of Certifications on IT Performance

Q. *Certifications...*



n = 283

Source: IDC's Certification Impact Study, 2008

Certification, at its core, is simply an attestation to the capability of the test-taker's skill on particular tasks. To design a reliable and informative certification, the certification sponsor attempts to isolate those skills and behaviors that improve (or retard) performance and develop a test that reliably predicts the test-taker's knowledge of those items. So, to the extent the test elements are relevant to a particular organization, the test-taker who passes a well-developed test has demonstrated a level of capability or proficiency that the certification sponsor says is sufficient to improve performance. While this seems complicated, IT managers understand the impact that certifications have on IT performance.

Impact of Sun Certification on System Administration Team Performance

As mentioned earlier, the performance of the system administration teams increases with higher concentrations of certified team members. We were interested if this also held true for teams with higher concentrations of certifications from a specific vendor. To test the validity of managers' perceptions that certifications improve the level of support and improve the overall quality of IT service delivery, we isolated the relative concentrations of certifications — specifically Sun certifications — to observe the impact that high or low concentrations of certifications had on a team's performance against these standard metrics.

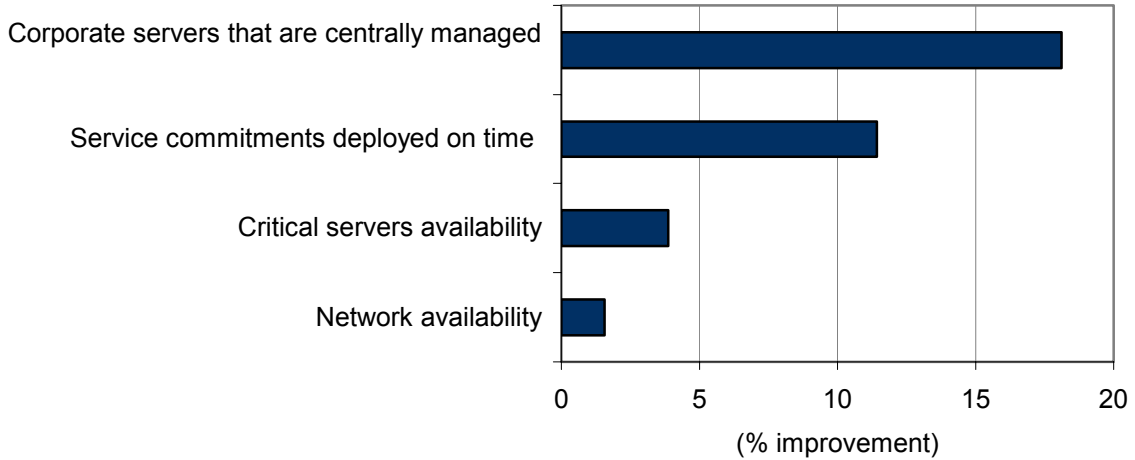
Revisiting the key metrics shown earlier, we found that organizations with higher concentrations of Sun-certified staffs had improved performance more than less certified teams across several facets of system administration.

In general, there was a marked improvement in performance when more than 50% of a team is certified. The most prominent improvement is in the percentage of servers that are centrally managed. Teams with high concentrations of certified staff had about 20% more of their corporate servers centrally managed (see Figure 2). This creates the potential for increased efficiency and increased reliability and for the improved performance in the other metrics we observed.

Surprising were the direction and magnitude of the change of improvement in time to recover from unexpected outages. Initially it seems odd that fewer unscheduled outages are repaired in less than an hour. However, when we consider that those same teams reported a 2–4% increase in the availability of both the network and critical servers, the results are consistent with what we hypothesized earlier: Avoiding "unscheduled outages" that take less than an hour to recover increases system availability. Skilled system administrators prevent the "preventable," and the remaining, more complex outages require more time to properly isolate and repair.

FIGURE 2

Selected Process Performance Metrics - Impact of Certification: System Administration



n = 75

Notes:

Performance improvement is the percentage difference in performance between high and low concentrations of certified system administrators.

Percent improvement = ((average of the top quartile of certified teams - average of the bottom quartile of certified teams) / average of the bottom quartile of certified teams)

Source: IDC's Certification Impact Study, 2008

At the most basic level, well-trained teams are better able to leverage the built-in features and functions of a technology or tool than undertrained teams, often increasing the performance of the tool and their own productivity. At the same time, well-trained team members are better able to anticipate problems, implement preventative actions (such as preventing simple, unexpected outages), and work to develop operational improvements than their undertrained counterparts because of their familiarity with the capabilities of the deployed technologies.

To further illustrate the range of performance, we offer two examples of how performance changes depending on the concentration of Sun-certified staff. We chose to highlight those metrics that have a direct impact on organizational performance:

- ☒ **Corporate servers centrally managed.** As mentioned earlier, centrally managed servers increase standardization of server configurations and compliance with corporate security and administration requirements and allow the most efficient use of staff resources.
- ☒ **Service commitments deployed on time.** When a commitment is deployed or completed on time, the related business initiative can also be executed in a timely manner.

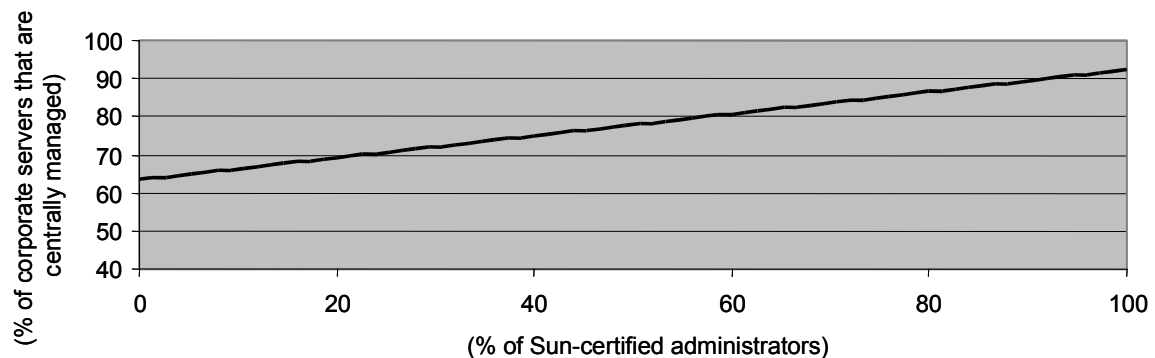
Figure 3 shows the percentage of corporate servers centrally managed plotted against the percentage of the administration team holding a relevant Sun certification. The range extends from below 70% for teams with less than 20% of administrators certified to over 90% of corporate servers centrally managed for teams with more than 90% of administrators certified.

Effective use of automation and management utilities facilitates this centralization. Automation will play an increasingly critical role as IT organizations strive to control costs, improve service delivery, meet compliance requirements, and manage virtualized resources. Automation will range from simple, tactical task-based applications to sophisticated policy-driven solutions. Systems management software is increasingly able to automate several areas of time-consuming administration activities, including run book automation (define, build, orchestrate, manage, and report on workflows that support system and network operational processes), workload scheduling and automation, and end-to-end datacenter automation.

System management software will increasingly facilitate the automated management of virtualized resources, improving control of dynamic infrastructures. Tools that automate management of power and cooling, to drive efficiencies, are also available, but they are far too complicated to be manually monitored and adjusted.

FIGURE 3

Percentage of Corporate Servers Centrally Managed by Percentage of Team with Sun Certifications



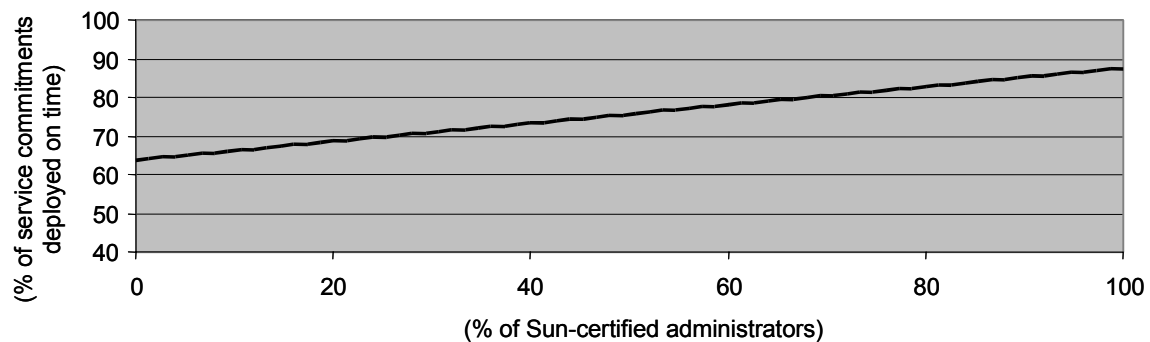
Source: IDC's Certification Impact Study, 2008

Figure 4 shows the percentage of service commitments deployed on time plotted against the percentage of the administration team holding a relevant Sun certification. The range extends from below 70% for teams with less than 20% of administrators certified to over 85% of services commitments deployed on time for teams with more than 90% of administrators certified.

Management software vendors will continue to develop solutions to support the increased adoption of process "standards" and best practices. This trend will be accelerated by ITIL version 3, with its focus on service life-cycle management, IT business alignment, and continual service improvement. ITIL version 3 and related activities help the system administrator (and the entire IT organization) focus on improving the service delivered to each end user.

FIGURE 4

Percentage of Service Commitments Deployed on Time by Percentage of Team with Sun Certifications



Source: IDC's Certification Impact Study, 2008

How to Increase Team Skill: Trusted Sources

Not surprisingly, IT managers are constantly balancing the benefits of training against the day-to-day operational requirements of the business. This tension forces IT managers to be particularly practical when choosing the types of training they most value. That value comes from balancing the source of training that is most "trusted" with the type of training considered most "convenient."

IT managers want to ensure that the training they offer their teams is on point and achieves the business improvement they are looking for. Therefore, it is important that preparatory materials be highly effective in helping IT staff meet the business goal. IT managers believe that "authorized" training materials are significantly more effective in transferring knowledge than "unauthorized" sources of instruction.

CONCLUSION

To maximize the value received from technology investments, IT managers must maximize their teams' skills in areas where performance is critical. The benefits include technical performance improvement, increased team productivity and performance, and greater return on technology investments. System administrators have a central role in ensuring that networks and systems are properly functioning and delivering the required level of value to the organizations. IDC found that more system administration service commitments were deployed on time with high concentrations of Sun-certified professionals. The benefits of team skill can be significant and include the following:

- ☒ Meaningful concentrations of certified system administrators increase the achievement of significant operational metrics, including efficient management of corporate servers, network and server availability, and meeting service commitments.
- ☒ Improvement in team skill level, as measured by certifications, is directly correlated with increased organizational performance in key system administration metrics.
- ☒ Teams with 50% of members certified on relevant Sun technologies and processes perform at the top tier of operational performance.
- ☒ Every increase in certified staff improves performance in each metric reviewed.
- ☒ Training, and ultimately certification, is critical to improving overall IT performance.

Ultimately, IT managers make technology decisions that they believe add to their organizational performance at a reasonable cost. Research demonstrates that improving team skill through certifications has a significant impact on the success of those strategies. IT organizations that actively develop their teams' skills are most likely to achieve high performance, maximize investment benefits, and contribute more significantly to overall business success.

Learn More

- ☒ *Worldwide System Infrastructure Software 2008 Top 10 Predictions* (IDC #209633, December 2007)
- ☒ *Sun Solaris 10 — Customer Experiences* (IDC #207467, June 2007)

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