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Prepared For Cisco Systems

January 2009

IT's Role In Reducing Corporate Environmental Impact

A commissioned study conducted by Forrester Consulting on behalf of Cisco Systems Inc.

FORRESTER®



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Executive Summary

Environmental sustainability is climbing up the strategic agenda for most corporations. Green initiatives are driven by a combination of strategic goals like enhancing the brand, complying with regulation, and simply doing the right thing as a corporate citizen, and bottom-up motivations like saving money by cutting down on energy consumption.

To assist in gauging the demand for future products and services aimed at helping companies monitor and manage their sustainability initiatives, and in particular greenhouse gas (GHG) emissions, Cisco commissioned Forrester Consulting to conduct a series of interviews with corporate IT and operations professionals. We sought to illuminate the role of the IT organization in corporate sustainability.

We learned that for some organizations, IT is in a leadership role regarding green initiatives, not just in developing more energy-efficient computing infrastructures, but also in applying that infrastructure to improving the sustainability of business processes like supply chain, collaboration, and facilities management. More often, though, our interviews revealed that the IT organization was in a supporting role, without a clear mandate for leading or even enabling more sustainable business operations or reduced GHG emissions. Even in these situations, a number of indicators emerged that we believe portend a more central role for IT in corporate sustainability across a wide spectrum of companies and industries. Many companies cited the need for:

- **Collaboration and conferencing to link a far-flung workforce.** Many of the companies we interviewed keenly felt the environmental impact of employee commuting and business travel among their locations. And they see improved electronic communications — videoconferencing and shared computing spaces, built on reliable networking — as the key to reducing the environmental impact of a dispersed workforce.
- **Collecting, analyzing, and reporting of environmental data.** Companies in many industries clearly foresee the requirement for better visibility into their energy consumption, GHG emissions, and other environmental data. And they will look to their IT organization to provide the instrumentation, databases, and analysis tools to give the management team — and other stakeholders like investors and regulators — visibility into the company's environmental performance.
- **Demonstrating how cost savings and improved sustainability go together.** IT will be an important test bed for the key concept that doing right by the environment can also do right by a company's bottom line. IT organizations have numerous opportunities to improve efficiency, cut resource consumption, and save money all at the same time. More resilient data centers and better-managed PC populations that also save money and cut GHG emissions will be early examples for companies of how lean and green go together.

Underpinned by new capabilities emerging from their technology suppliers, we are confident that IT organizations will assume a more central role in corporate sustainability initiatives. Forward-thinking IT organizations are seizing the initiative now, looking beyond the narrow view of green IT as more energy-efficient data centers and PCs, transforming it instead into an underlying resource that all operations enterprises will rely upon to assess, manage, and report their environmental progress. In addition, IT organizations will perform holistic analyses of how software and networks can transform business processes to a more sustainable model. IT practitioners will look beyond box-level energy efficiency; in fact, it will often make sense for IT to consume *more* energy, if by doing so it substitutes for more carbon-intensive processes. In many companies, we expect that IT management will be at the forefront of this kind of holistic analysis on behalf of the entire business.

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Introduction

Cisco Systems commissioned Forrester Consulting to conduct a set of interviews to analyze the role of IT systems and organizations in improving corporate sustainability, particularly in reducing GHG emissions. In December 2008, Forrester Consulting conducted 20 in-depth telephone interviews with IT, operations, and facilities professionals involved in implementing green initiatives at large companies in the US. All of the companies interviewed had annual revenues of \$1 billion or more; 10 companies had annual revenues totaling \$10 billion or more. Interview respondents were primarily from the IT department with titles like director of IT or IT manager, seven respondents were from operations with titles like manager or director of operations, and one respondent was from facilities.

See Appendix A for details of the interview and research methodology and a breakdown of the demographics of the interviewed companies.

Business, The Environment, And IT

The Environment Is Ascending In Corporate Strategy

Environmental responsibility is quickly climbing up the strategy agenda of large companies across many industries. No longer just the province of the regulated sectors like utilities, being green is becoming important to companies in retail, manufacturing, financial services, and telecom. Why? Most powerfully, because their customers are demanding it. Both business and consumer buyers are increasingly looking to do business with companies that share their values about protecting the environment and creating more sustainable economic growth.

“Our customers want us to operate in an environmentally responsible way. We have seen and felt better customer responsiveness because of our environmental policies.” (Retail company)

“Our customers want us to apply green initiatives to our processes.” (Manufacturing company)

We asked our interviewees to rate the importance of sustainability policies and practices in their firm's business strategy. On a scale of 1 to 5 where 5 is a “crucial priority,” the average rating was 3.8, with six of the 20 companies rating a 5 (see Figure 1). And when we asked what environmental initiatives were most important, reducing GHG or carbon emissions was almost always at the top of the list.

“There are a number of environmental issues that we are working at present. Of those, reducing carbon or GHG emissions is on top of the priority list.” (Manufacturing company)

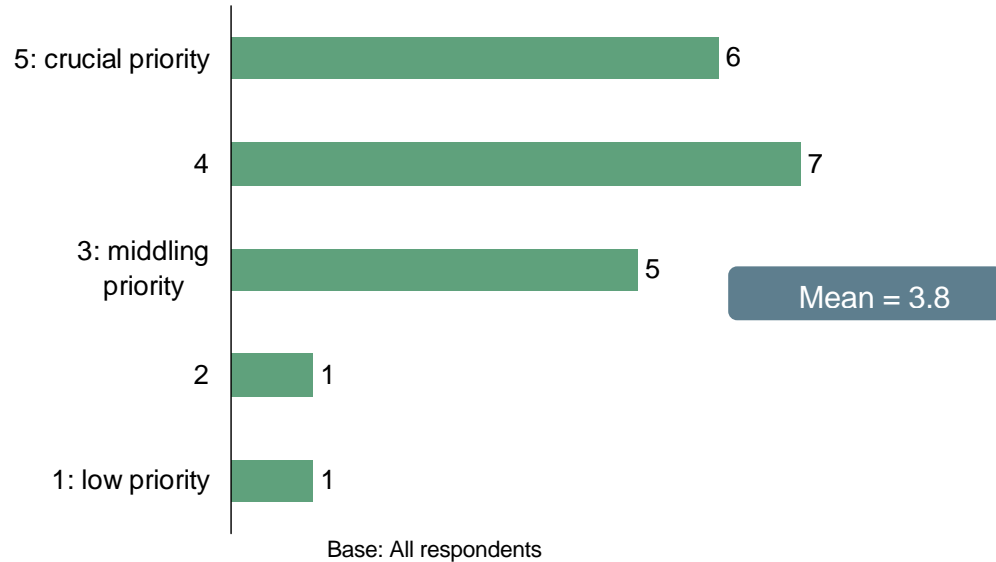
“We have a new CEO who is quite aware of sustainability issues. The most important initiatives are reduction of GHG emissions and CO2.” (Manufacturing company)

“Being environmentally conscious is part of our company policy formulated by our CEO. To begin, we implemented a program to reduce GHG emissions.” (Telecom company)

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Figure 1: Environmental Policies And Practices Are A Middle-To-High Priority In Companies' Overall Business Strategy

Q1. "On a scale of 1 to 5, please rate the importance of environmental policies and practices in your company's business strategy?"
(5 = crucial priority, 3 = middling priority, 1 = low priority)



Source: Interviews of 20 IT and operations professionals. A commissioned study conducted by Forrester Consulting on behalf of Cisco.

IT's Role In Green Initiatives Varies Widely

Given the increasing prominence of environmental protection in company strategy, we explored the role of the IT organization vis-à-vis other participants and stakeholders in improving a firm's sustainable performance. Using the 1-to-5 scale, where 5 means "leading the rest of the company" and 1 means "only peripherally involved," the average rating of our 20 interviewees was just more than 3 ("involved but not in a leadership role"). Translation: The role of IT varied widely among the firms we interviewed:

"The IT department certainly takes a leadership role in reducing environmental impact. For example, we have a global workforce, and our conferencing technology cuts down on the need to travel." (Telecom company)

"IT is using technologies that increase energy efficiency. They should go further in creating methods to measure and assess the economic and environmental benefits of our initiatives." (Financial services company)

"IT is not in a leadership role at present. We need increased budget to manage and report data pertaining to our environmental activities." (Manufacturing company)

"IT is not the most important group; it is a support function. As a service provider, IT does not need to be in a leadership role." (Telecom company)

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The IT organization's role sometimes goes beyond simply reducing energy consumption within the IT infrastructure and operation itself. At a few companies, IT is involved in helping processes across the company become more sustainable.

"Of course IT uses lots of computers, and makes sure that their energy consumption is minimized. IT also takes a leadership role in conferencing technology to cut travel, and in encouraging employees to find alternative means of commuting." (Telecom company)

"We are reducing the usage of paper through more use of Internet-based applications." (Financial services company)

"IT is involved in encouraging and enabling our staff to work from home, which helps improve utilization of our office space and reduces emissions from vehicles." (Manufacturing company)

These statements are indicative of the next phase of green IT: moving beyond energy efficiency in IT hardware and into using IT systems as enablers for making a broad array of business processes more sustainable. In fact, strict box-for-box comparisons of equipment's energy efficiency will increasingly take a back seat to a broader analysis that measures the environmental impact of IT systems on business processes. In the coming years, "green IT" will mean not just energy-efficient gear, but systems that enable energy efficiency in the business functions that they support.

Enterprise Expectations Of Green Initiatives

Now we turn the question of why. What factors are driving organizations to implement green initiatives in their IT organizations and beyond, and what factors are inhibiting those initiatives?

Energy Cost Savings Are The Most Frequently Expected Outcome

Large companies undertake green initiatives with a variety of goals and outcomes in mind. These outcomes generally fall in one of two categories: 1) tactical, operational goals within the IT organization, and 2) more strategic goals held at the corporate level. In our interviews, we found that “inside out” or tactical concerns are roughly on balance with more “outside in” or strategic concerns (see Figure 2).

Figure 2: The Most Important Green Outcomes

Q7. “What are the most important outcomes from pursuing corporate green initiatives at your company?”



Base: All respondents

*Respondents were asked to rank their top three choices. Points were calculated by assigning 3 points to No. 1 rank, 2 points to No. 2 rank, and 1 point to No. 3 rank.

Source: Interviews of 20 IT and operations professionals. A commissioned study conducted by Forrester Consulting on behalf of Cisco.

Reducing energy-related operating expenses (typically, the electricity bill) was the most frequently cited outcome that our interviewees expect from their green efforts. Controlling other operating expenses and avoiding new capital expenditures also ranked highly. These are typically the most tangible and thus easiest-to-justify green returns that companies seek.

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But note that many of the companies we interviewed also put a premium on more external-facing outcomes such as complying with regulation, improving the company's brand image, and simply "doing the right thing" to protect the environment. These broader, corporate goals for green initiatives will prompt companies to adopt more holistic approaches to sustainability. Picking the most energy-efficient IT hardware, for example, will be but one activity within a diverse portfolio of green efforts. After a period of focusing on greener IT infrastructure, we expect technology leaders to turn their focus toward leveraging IT infrastructure on behalf of making other corporate functions greener. And ultimately, this latter focus will have bigger payoffs in terms of both reduced environmental impact and improved business operations and results.

Cost Savings Align With Environmental Improvement

Most companies expect to satisfy multiple objectives or outcomes by performing the same green IT activities. They very clearly expect that business improvement (like reduced costs, enhanced brand, and better regulatory compliance) will align with environmental improvement (reduced energy consumption and a resulting decline in corporate GHG emissions).

"Environmental initiatives do have initial investments, but the long-term benefits help save both energy and money." (Energy company)

"Environmental initiatives are compatible with more efficient and lower-cost operations, and will help us save money in the long run." (Manufacturing company)

"We are using technologies that are more energy-efficient, which helps our organization to be environmentally responsible and lower the cost of operations as well." (Telecom company)

But companies also realize that there is no free lunch; saving money will, at least in the short run, require investment.

"It costs more to be more environmentally responsible, because in the short term, there is a lot of investment to be done. Our company's philosophy is that the benefits in the long term will more than make up for the initial investments." (Telecom company)

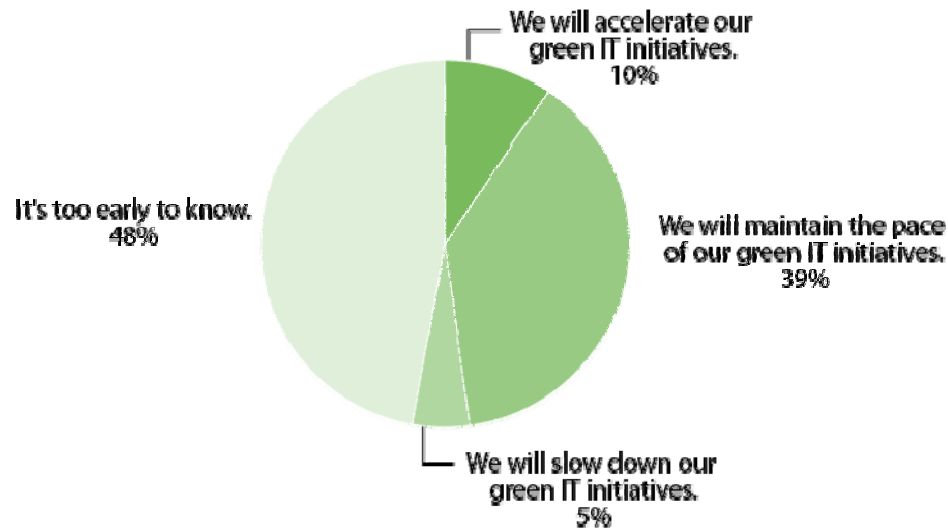
"Environmental initiatives do require initial investments in order to save energy and money in the long term. For example, technology has initial costs to set up the infrastructure and install new communication devices that are more efficient." (Energy company)

Companies increasingly recognize the alignment of operational cost savings with improved corporate sustainability. An important outcome of this growing awareness is companies' willingness to fund green IT and other sustainability initiatives even in the face of economic slowdown. In our global online survey of IT professionals conducted in October 2008, we found that twice as many companies were accelerating their green IT investments in the face of economic weakness as those that were slowing down those investments (see Figure 3).

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Figure 3: Early Read Indicated That A Slowing Macroeconomy Will Not Slow Green IT Efforts

“What impact, if any, does the worsening economic outlook have on your organization's green IT initiatives?”



(percentages may not total 100 because of rounding)

Base: IT professionals at 1022 companies

Source: October 2008 Global Green IT Online Survey, Forrester Research.

Addressing Barriers To Green Initiatives

Given the array of organizational stakeholders and involvement in green efforts, and the inherent cost/benefit tradeoffs, it is no surprise that companies encounter barriers to implementing these initiatives. The barriers most often cited in our interviews, and thoughts on how to address those barriers, were:

- **A slowing economy tightens capital budgets.** Even while recognizing the lean-and-green alignment, many interviewees cited the current macroeconomic environment as making the cost thresholds for green investments much higher. These companies foresee longer decision and implementation cycles for new energy-efficient technology and operations, especially those that require significant capital expenditures. We expect that more incremental solutions, such as add-on software modules for energy management, will demonstrate quick payback and thus avoid the capex chopping block.

“Some green initiatives will go slower due to capital budget constraints. We are looking for products that do not require high capital expenditure but are still energy-efficient.” (Financial services company)

“If an environmental initiative involves a significant amount of capital expenditure, it probably won't be done.” (Retail company)

“We fight the common perception that adopting greener initiatives will cost the company more. If we are successful, then the pace of our environmental initiatives will stay the same even in tougher economic circumstances.” (Manufacturing company)

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- **Organizational inertia requires continuing education.** Many companies find that while their management wants cost savings and reduced environmental impact, they are not prepared for some of the process and behavioral changes necessary to make greener operations into reality.

"We lack experienced staff to identify and implement green initiatives. We are working with local colleges to help educate the kind of workforce we will need." (Energy company)

"It is not easy to convince people to do things differently. We have been conducting awareness and training programs to help people understand the long-term benefits of being more environmentally conscious." (Manufacturing company)

"Our biggest barrier is convincing management to do things that benefit the environment. We have been highlighting measures taken by our customers and identifying customers who are asking us to do the same." (Manufacturing company)

"Our management does not believe that staff working from home performs the same as staff working in the office. We are trying to have tasks judged on their quality alone." (Manufacturing company)

- **Measuring cost/benefit is still both art and science.** Many companies struggle with quantifying all the benefits of their green activities. While operating cost savings are relatively easy to identify, other benefits are less tangible and thus more difficult to justify.

"We are very good at predicting the cost of not complying with regulations. But we struggle to value intangibles. We invest in building alliances and trust with environmental organizations, and with attracting the right kind of investors to our stock, but none of that is easily measured." (Energy company)

What Enterprises Want From IT Vendors

Whether or not the IT organization was leading corporate sustainability activities, all our interviewees had a wish list of new technologies and capabilities that they would like to see from their IT suppliers. Many companies want to see their IT suppliers get more aggressive about energy efficiency in mainstream server, storage, and network equipment. More broadly, several companies mentioned "paperless" processes that would reduce resource consumption and improve effectiveness. And systems for remote conferencing and collaboration are clearly in the mix as well, with several of our interviewees already seeing benefits like quicker decision-making, reduced travel requirements, and a cutback in employee commuting.

Most interesting were a number of companies identifying their need for IT systems to compile, manage, and track data relating to their environmental initiatives across the entire organization. This requirement is emerging as environmental initiatives increase in size and number, and companies want to: 1) track and justify their efforts in terms of cost/benefit, and 2) report on their progress to regulators, investors, customers, and employees. It represents a new and crucial role for the IT organization: as the central repository, manager, and reporter of corporatewide environmental data and progress.

"Vendors should come up with optimization tools and scenario planning support to help us optimize energy consumption." (Manufacturing company)

"IT should provide us with a software solution that tracks the initiatives and follows up on the outcomes." (Manufacturing company)

"Our vendors should come up with comprehensive software to track compliance of green initiatives. Not just a database but a compliance management tool." (Retail company)

As these software and network capabilities emerge from the tech vendors, IT organizations will take on new roles and responsibilities. In many companies, we expect that the increasing importance of sustainability initiatives will enable IT to shift its posture relative to the rest of the business, from a cost center or service organization to an enabler of a key strategic imperative for the entire company. Forward-thinking IT organizations are seizing the initiative now, and looking for their suppliers to bring new capabilities that will go well beyond the narrow view of green IT as more energy-efficient data centers and PCs, transforming it instead into an underlying resource that all operations and locations of enterprise organizations will rely upon to assess, manage, and report their environmental progress.

In addition, there is opportunity for IT organizations to perform holistic analyses of how software and networks can transform business processes to a more sustainable model. IT practitioners must look beyond simply making their infrastructure more energy-efficient; in fact, it will often make sense for IT to consume *more* energy, if by doing so it substitutes for more carbon-intensive processes. For example, increasing IT's energy consumption with new videoconferencing gear and high-bandwidth networking may make perfect sense if that substitutes for (and thereby reduces) GHG emissions resulting from employee airplane travel. IT management will be at the forefront of this kind of holistic analysis on behalf of the entire business.

Conclusions

The primary objectives of this study were to understand the current and future roles of IT organizations in corporate sustainability initiatives.

The study's findings can be summarized as follows:

- Environmental sustainability is an important element of corporate strategy.
- IT organizations generally are supporting rather than leading sustainability initiatives.
- IT has the opportunity to play a more central role in corporate sustainability. IT organizations will be crucial catalysts in:
 - Employee collaboration across geographies, cutting down on GHG emissions from travel and commuting.
 - Collecting and analyzing environmental data, a new and vital element of reporting corporate performance.
 - Demonstrating the viability of reducing environmental impact while simultaneously reducing costs through more efficient IT infrastructure and operations.

Recommendations For Technology Decision-Makers

Companies are clearly in different stages of awareness and activity regarding environmental initiatives. But the trend is also clear: Sustainability will be more important, not less, in the months and years to come. The tight linkage of increasing environmental responsibility and improved business results will be only more apparent in the future.

The ability to capture a win-win on both environmental and economic fronts makes it imperative for IT professionals and their associates in facilities, finance, and operations roles to use IT infrastructure as a catalyst to accelerate their organization's progress. The role of IT professionals will only expand in the years ahead, as IT leaders move from getting their own house in order to enable the rest of business to operate more sustainably.

To this end, IT management should:

- **Adopt a more holistic approach to green IT.** IT leaders will have plenty to do inside of their organization and infrastructure. But the real payoff from green IT efforts will come outside of the IT asset base, when technology is applied to business processes — facilities management, conferencing and collaboration, and supply chain optimization — that account for a much larger share of most companies' GHG emissions than do the IT operations themselves.
- **Expand the role of corporate networks.** Corporate voice and data networks will play a crucial, if hidden, role in IT's enabling of greener business processes. Big-bang green projects like building automation will depend on network reach, reliability, and bandwidth to connect thousands of sensor devices to management systems and dashboards. And collaboration software and conferencing systems, justified in part by their ability to reduce

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GHG emissions from business travel and commuting, will again depend on networks that link voice, PC, and mobile devices over multiple transport systems.

- **Conduct asset inventories and energy usage assessments.** The prerequisite for successful green projects is to document the current inventory and energy usage of equipment and processes. This is not just about using less energy in the data center, but understanding the energy and carbon footprint of business operations like real estate, business travel, product packaging, and delivery logistics. Assessment is the first step that creates the baseline against which alternatives and improvements — from server or network virtualization, to videoconferencing, to building automation — will be measured. In many companies, the systems and expertise to conduct these analyses will reside in IT.
- **Forge common cause with facilities, finance, and HR.** While we advocate a leadership role for IT in enabling green initiatives, strong organizational partnerships will be required. Facilities typically owns the energy plant and relationship with the electric provider; make sure that IT can share the costs, and rewards, of energy efficiency. Finance often holds the key to blending the capital budget required to invest in new equipment with the operating budgets that will realize the benefits of those investments. And HR is a crucial ally in engaging employees, creating incentives and rewards, and reconfiguring processes in a lower-carbon way. For example, work-at-home programs are typically 20% technology like remote collaboration tools, and 80% HR efforts to communicate, incent, and measure results.
- **Look for incremental, low-capital solutions.** As we heard in many of our interviews, capital budgets are under pressure. Even projects with quick paybacks will be difficult for many companies to fund during the credit and capital squeeze of 2008 to 2009. IT shops therefore should focus on green solutions that are incremental to their existing systems. Thin software layers that add energy monitoring capabilities, for example, will be much easier to justify. We also expect the capital crunch to increase the attractiveness of “as-a-service” offerings from IT vendors, where systems capacity is purchased on a per-month and per-use basis, alleviating at least some of the upfront capital requirement.
- **Look beyond the data center.** Much of the industry's green IT conversation focuses on corporate data centers, the biggest and most visible “energy hog” that the IT organization manages. And no doubt, there are clear money-saving and emissions-reducing moves to make in most data centers, like rationalizing the applications portfolio, virtualizing server and storage equipment, and improving their power handling and heat handling characteristics. But don't get mesmerized by the data center! Most companies use as much — and waste as much — power outside as inside the data center. Introducing power management for the PC population, or consolidating the company's printer fleet, can pay off just as handsomely as improving airflow in the data center.

Appendix A: Methodology

In December 2008, Cisco Systems commissioned Forrester Consulting to investigate the importance of corporate sustainability and reducing GHG emissions.

In addition to leveraging existing research and data, Forrester interviewed 20 IT, operations, and facilities decision-makers within the US in support of its investigation. The interview asked IT, operations, and facilities practitioners about the following areas:

- Importance of environmental policies and practices in the company's business strategy.
- IT's role in environmental initiatives.
- Green initiatives' barriers, benefits, and best practices.

Sample

The interview sample consisted of respondents from randomly selected organizations with \$1 billion or more in worldwide annual revenues that were planning or have implemented green initiatives, with operations based in the US. In addition, all the respondents were required to meet the following criteria:

- IT, operations, and facilities decision-makers or C-level executives.
- Influencers or decision-makers of the technical or business requirements for the selection of IT equipment and services.

Firmographics

We completed 20 in-depth phone interviews among a random sample of professionals. Respondents to this interview all represented enterprises with \$1 billion or more in worldwide annual revenues.

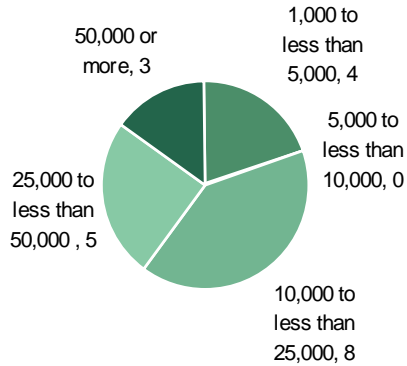
We set the following revenue quotas:

- Ten \$1 billion to \$10 billion in annual revenue.
- Ten \$10 billion or more in annual revenue.

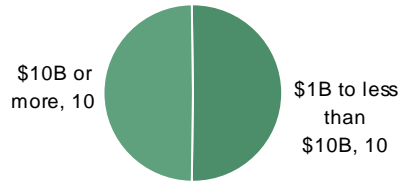
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Figure A1: Size Breakdown By Employee Count And Revenue

S1. "Approximately how many people work for your company worldwide?"



S2. "What is your company's estimated worldwide annual revenue?"

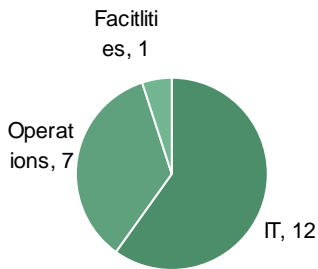


Base: All respondents

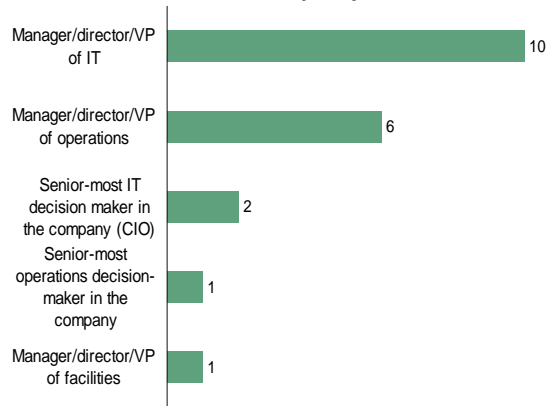
Source: Interviews of 20 IT and operations professionals. A commissioned study conducted by Forrester Consulting on behalf of Cisco.

Figure A2: Respondent Job Title And Department

S3. "Which of the following departments are you associated with?"



S4. "Which of the following most closely describes your job title?"



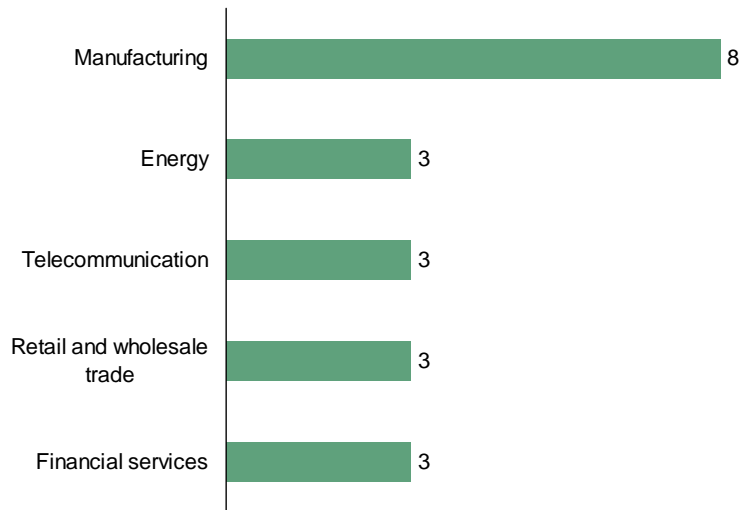
Base: All respondents

Source: Interviews of 20 IT and operations professionals. A commissioned study conducted by Forrester Consulting on behalf of Cisco.

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Figure A3: Respondent Industry Breakdown

S7. "Which industry most closely describes your company?"



Base: All respondents

Source: Interviews of 20 IT and operations professionals. A commissioned study conducted by Forrester Consulting on behalf of Cisco.