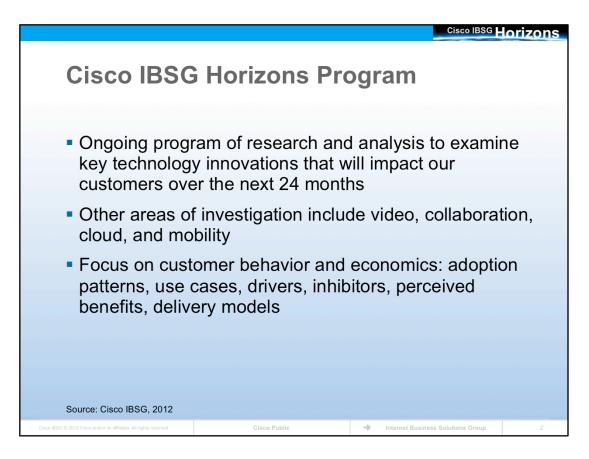
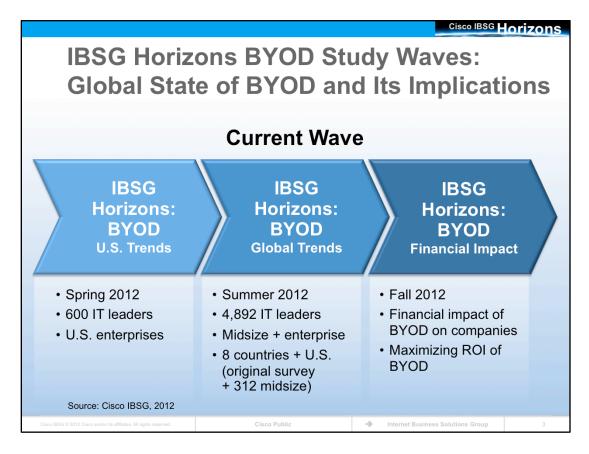


- Companies are now in a post-PC world, where the network must accommodate new choices at every layer of the stack. These include traditional, mobile, and social applications; multiple operating systems; various server architectures; and mobile devices ranging from tablets to smartphones and other mobility tools.
- The Cisco Internet Business Solutions Group (IBSG) has conducted extensive research and analysis to uncover key insights about the various devices entering the network and how companies are dealing with them.
- In this study, we use the term "bring your own device" (BYOD). You will also hear the terms "consumerization" or "consumerization of IT." BYOD and consumerization both refer to the use of personal mobile devices connected directly or remotely to an enterprise network.
- The study was global in scope, covering nine countries across four continents. This presentation includes the global data, with an emphasis on France.
- The presentation is modular. Please use any of these slides in other presentations, or reorder them to fit your needs.



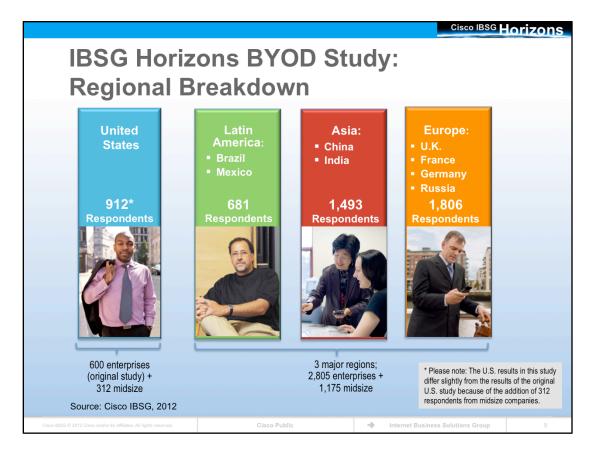
- This study is part of the Cisco IBSG Horizons program, an ongoing research and analysis program designed to identify business transformation opportunities fueled by technology innovation.
- In addition to "bring your own device" (BYOD), we are looking at enterprise video, collaboration, and cloud computing, and examining trends, use cases, adoption patterns, lessons learned, and financial impacts.
- Focusing on the link between a customer's technology environment and business strategy, the Horizons program accelerates the success of Cisco customers by identifying transformative, network-enabled strategies and analyzing their economic underpinnings.



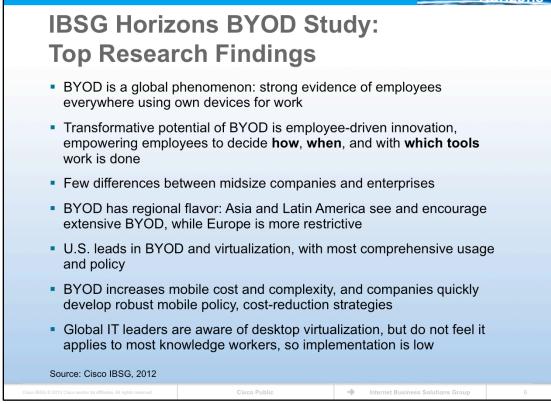
- This study is the second of three planned waves of Cisco IBSG Horizons BYOD research.
- In the spring of 2012, we surveyed 600 IT decision makers in U.S. enterprises to determine how prevalent BYOD is in enterprises, and how corporate IT departments are handling these new devices in terms of support, network access, and security. We also wanted to know whether corporate IT is supportive, indifferent, or hostile toward BYOD.
- When we saw the surprising degree to which U.S. enterprises had embraced BYOD, and their expectations for greater employee productivity and employee-led innovation, we wanted to know whether other countries, as well as smaller companies, were responding in the same way.
- So Cisco IBSG expanded its original study to include IT decision makers in both enterprises (1,000 or more employees) and midsize companies (500-999 employees) in eight countries across three regions. We also added over 300 IT decision makers from U.S. midsize firms to our initial 600 enterprise respondents. This is the current wave of research.
- In the fall of 2012, we will release a third wave of Horizons BYOD research that will focus on the financial impact of BYOD on companies, and opportunities for maximizing the benefits of BYOD.



- Overall, we surveyed nearly 4,900 IT leaders who were decision makers or influencers of their companies' mobility solutions.
- Our respondents represented:
  - CIOs, senior vice presidents, vice presidents, directors, and managers
  - About 70 percent were director or higher
- These leaders came from 18 industries, including:
  - Banking and financial services, construction, education, public sector, healthcare, hospitality, information and media, insurance, manufacturing, oil and gas, life sciences, professional services, retail, technology, telecommunications, transportation, utilities, and wholesale distribution

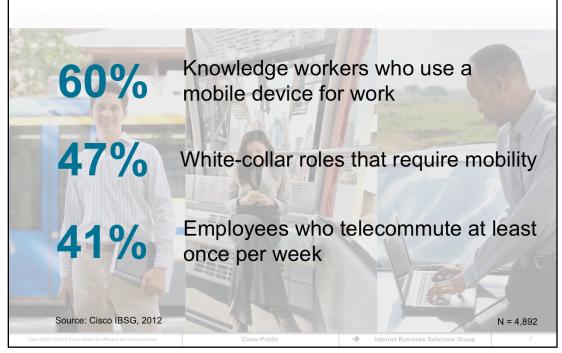


- The study's respondents came from the following regions and countries:
  - The United States
  - Latin America: Brazil and Mexico
  - Asia: China and India
  - Europe: the United Kingdom, France, Germany, and Russia
- This range of countries and the number of and seniority of respondents was selected to determine whether BYOD is a trend that crosses geographies and cultures. We also wanted to detect any meaningful regional differences.

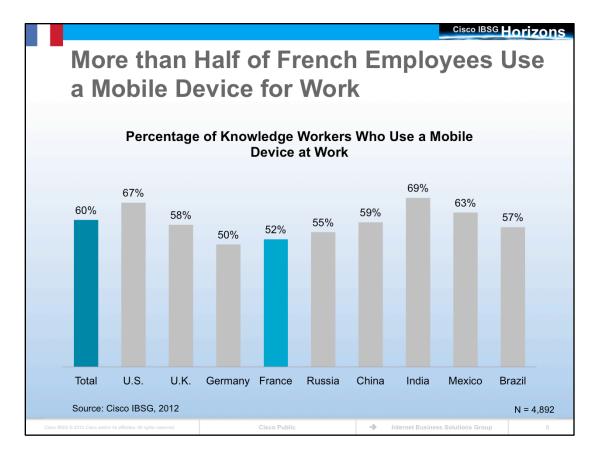


- Our study confirmed that BYOD a global phenomenon: Consistent with the original U.S. study, we found strong evidence of employees using their own devices for work around the world.
- We found that BYOD is not simply about device usage, but freedom and innovation. BYOD empowers employees to innovate using the tools with which they are most comfortable—how and when they want to work.
- There are few differences between midsize companies and enterprises in the rate of adoption or perceived benefits of BYOD.
- Attitudes toward BYOD vary significantly by region: countries such as Brazil, China, India, and Mexico see—and encourage—extensive BYOD, while Europe is more cautious and restrictive.
- We also found that as BYOD becomes more commonplace, companies need to respond with more robust mobile policies and cost-containment strategies, or escalating complexity and costs could threaten some of the gains.
- BYOD also implies new challenges in security.
- We also wondered if desktop virtualization would keep pace with the growing BYOD trend. We found that global IT leaders are aware of desktop virtualization, but implementation is lagging, perhaps because respondents were much more uncertain about its applicability to knowledge workers than in the United States.

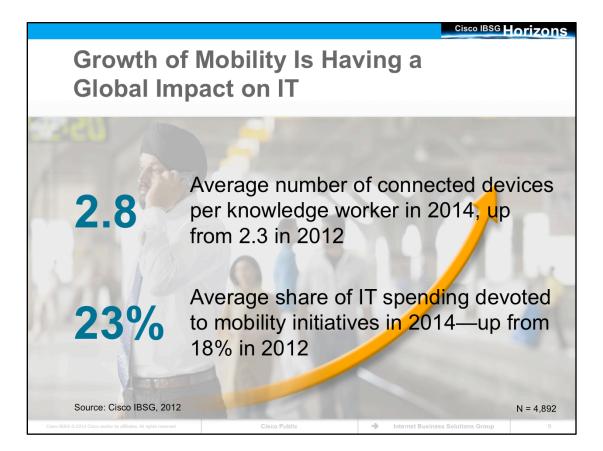
## Around the World, Mobility Is Pervasive



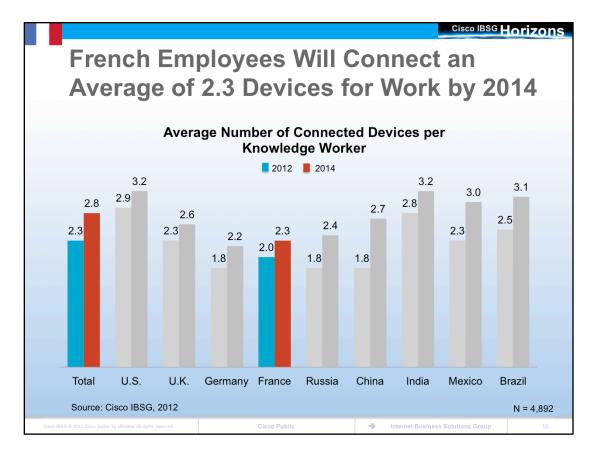
- Mobility means to work away from a traditional office or fixed location on a regular basis.
- Because mobility is pervasive in companies today, the reality is that mobile devices are becoming necessary tools for employees to get their work done.
- 60 percent of employees—by which we mean knowledge workers or whitecollar workers—in the companies Cisco surveyed use mobile tools to accomplish their work. These include laptops, smartphones, tablets, and other wireless devices.
- Interestingly, only 47 percent are officially designated as "mobile workers." Companies are finding that their employees want to use mobile devices to perform their work, even if these devices are not strictly needed for their job roles. In other words, mobility is becoming vital for a wider range of jobs.
- In addition, more than 40 percent of all employees telecommute at least one day per week. The flexibility to move from home to office, and stay connected on the road, is provided by mobile devices.



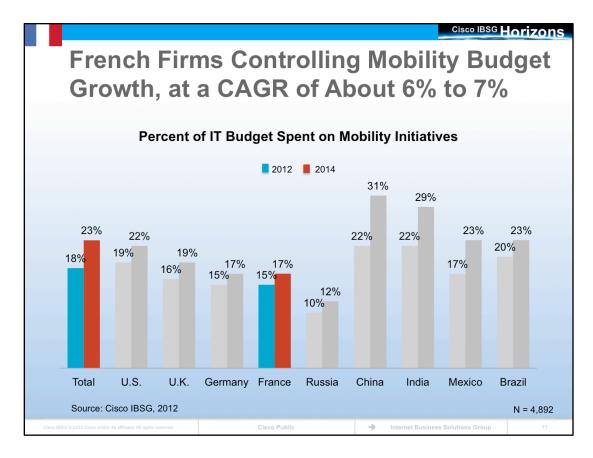
- The United States and India lead other countries in the percentage of knowledge workers who use mobile devices, but China and Mexico are not far behind.
- On the other hand, in Germany and France, just over half of knowledge workers use mobile devices. We shall see throughout the research findings that European nations, while they see strong usage of mobility in general and BYOD in particular, are behind other countries in perceiving and embracing these trends. We should not lose sight of the fact that in France, and Europe as a whole, many employees use mobile devices for work, and that IT departments are broadly supportive of BYOD. It is only in comparison with the enthusiastic reception of BYOD in other countries that France appears to be lagging.



- Employees' need or desire to be mobile and connect to the company network remotely is driving the growth of smartphones, tablets, and other mobile devices.
- The proliferation of these mobile devices in companies is a fact of life, and this means IT needs to change the way it manages devices. This growth in mobility affects data security, access control, platform maintenance, application support, and much more.
- In 2012, knowledge workers had an average of 2.3 devices connected to the network, including smartphones, laptops, tablets, desktops, and so on.
- By 2014, this number will rise to 2.8 mobile devices per knowledge worker.
- This growth in mobile devices will have a profound impact on IT support and network loads. The IT leaders in this study expect the share of IT spending on mobile devices to grow from 18 percent in 2012 to 23 percent by 2014.



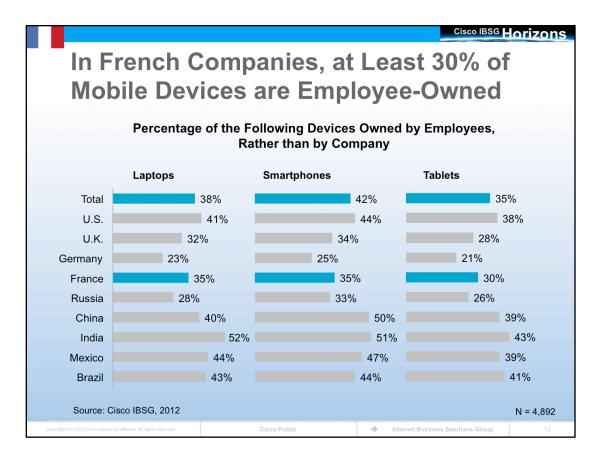
- French employees are connecting an average of two mobile devices each to the corporate network. This is more than their counterparts in Germany, Russia, and even China, at present.
- French IT decision-makers expect modest growth in the number of mobile devices per employee, to 2.3 (8 percent CAGR), while in four other countries, employees will be using an average of three devices. Thus, the burden on corporate networks in France will be modest in comparison.



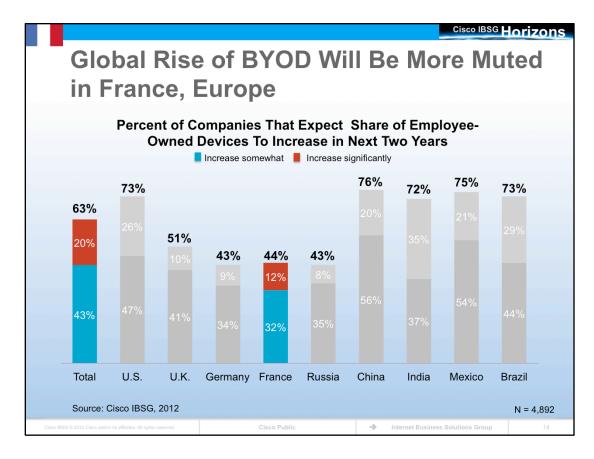
- Mobility's share of IT budgets in France, while on par with other European countries, is one of the lowest in the study at 15 percent, compared to 19 percent in the United States and upwards of 20 percent in Asia and Latin America.
- In sync with the modest increase in devices connecting to the network, the portion of IT budgets dedicated to mobility in France will also go up only incrementally, from 15 percent now to 17 percent two years from now.
- On average, mobility as a percentage of IT spending across all countries surveyed is slated to grow by 22 percent.



- A large and growing share of the mobile devices employees use for work are owned by employees personally. For example, 42 percent of smartphones and 38 percent of laptops are employee-owned. This shows that BYOD, far from being an emerging trend, is already well-entrenched in corporations throughout the world.
- And IT leaders see strong growth for BYOD in the next two years, with 63
  percent saying they expect the percentage of employee-owned devices to
  increase.



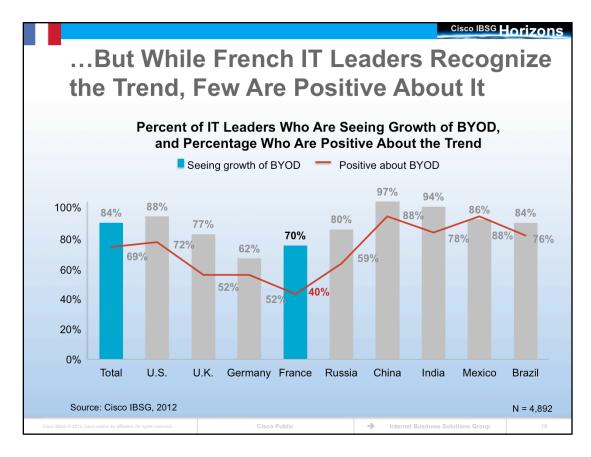
- The percentage of laptops, smartphones, and tablets connecting to the network that are employee-owned is higher in France than in any other European country. This includes 35 percent of smartphones.
- In comparison to Asian and Latin American countries, however, European countries are behind. In Germany, for example, IT leaders see only about half of the BYOD adoption of India. As we shall see, the wariness of European IT leaders and more restrictive IT policies among European companies, including prohibitions on BYOD or lower levels of support, explain some of the difference.



- Compared to steep rise of BYOD expected in the United States, Asia, and Latin America, only 44 percent of French companies interviewed expect to see an increase in the percentage of employee-owned devices, and another 35 percent expect no change.
- Nearly one-fifth (18 percent) of French companies actually expect a **decline** in employee-owned devices compared to company-issued ones, compared to only 6 percent of U.S. firms.
- In contrast, higher current adoption and greater growth in non-European countries will quickly make BYOD the predominant approach in these regions. Of special note is the high percentage of IT decision makers who say BYOD increases will be "significant": 35 percent in India, where more than half of smartphones and laptops are already employee-owned, and 29 percent in Brazil, where more than 40 percent of major mobile devices are employee-owned.



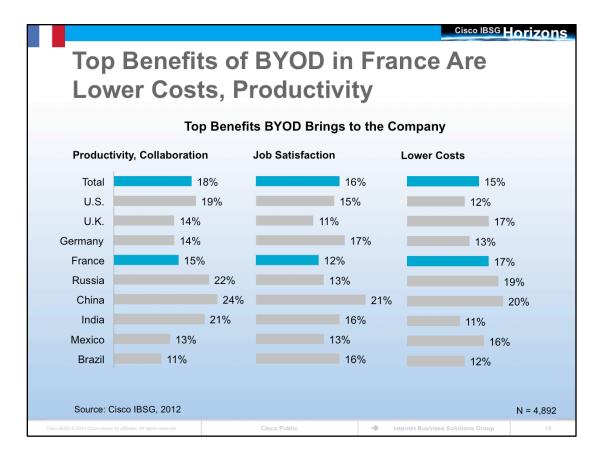
- Eighty-four percent of the IT leaders in this study say they are seeing BYOD growth in their companies.
- Although this poses challenges for these IT leaders, 69 percent say they consider BYOD to be somewhat to very beneficial for their IT departments.



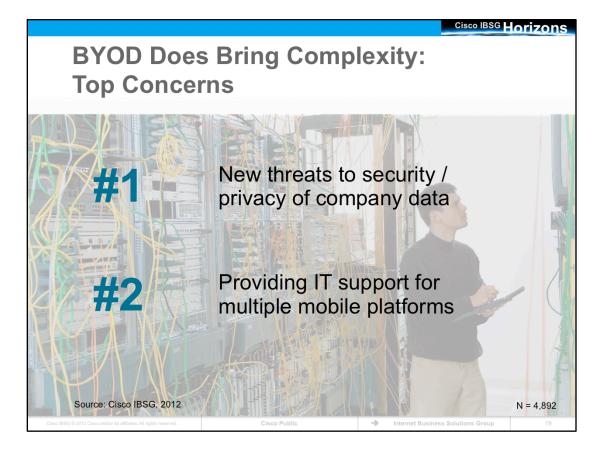
- While IT decision makers have different expectations for the rate of BYOD growth, 84 percent agree that more employees are using their own devices for work purposes. Even in Europe, where the BYOD trend is less prevalent, 72 percent are seeing growth.
- It is in the sentiments of IT leaders that we see the greatest gulf. In France, only 40 percent think BYOD is a positive development for their organizations: compare to China and Mexico, where nearly 90 percent of IT leaders are positive.



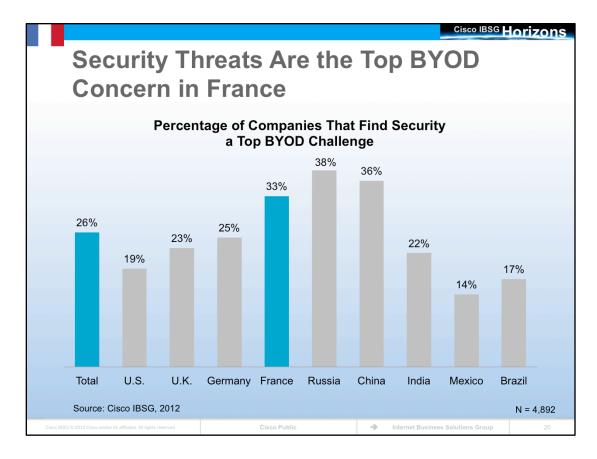
- The top benefits of BYOD for companies are:
  - Productivity: Employees become more productive, and they can collaborate with each other and those outside the company more easily.
  - Job satisfaction: Employees want to use the same devices for work that they use in their personal lives. When employees can choose their own devices, they are happier and more satisfied in their work.
  - -Lower costs when employees pay for their devices.



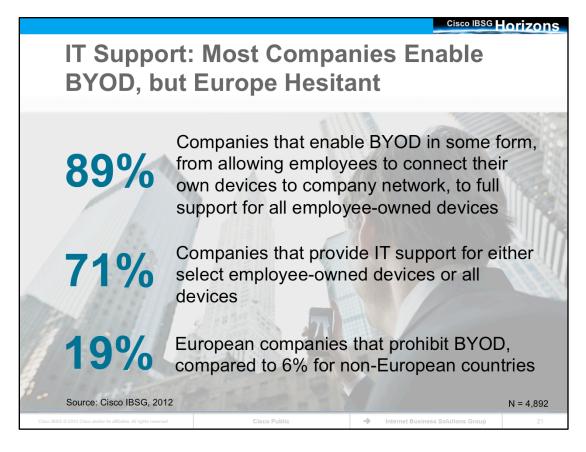
- Reduced mobility costs, due to employees paying for part (or all) of the costs of their mobile device, and from improved IT resource utilization, is the top benefit identified by IT leaders in France, as well as in the United Kingdom.
- Overall, the primary benefit IT leaders see from BYOD is increased employee productivity, which is the second-place benefit in France. This is an important finding, because fears that employees would be distracted by personal applications and content (such as using social networks, playing games, using unauthorized sites for personal business and entertainment) have been an argument against BYOD.
- Of note, Chinese IT leaders are looking to BYOD to deliver significant productivity, satisfaction, and cost improvements.



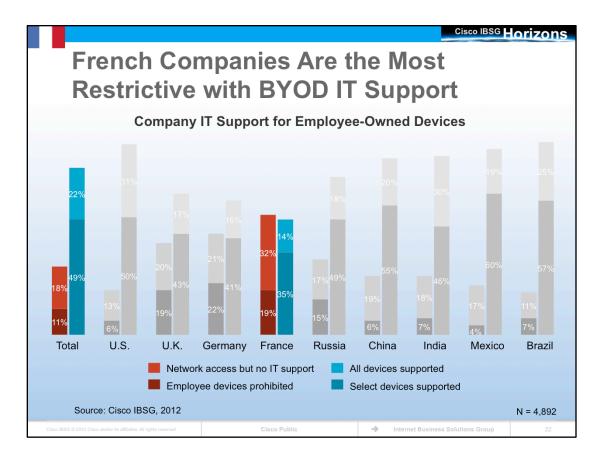
- The international results are consistent with what we found in the United States regarding the main drawbacks of BYOD. The top concerns according to the IT leaders in this study are:
  - Security—How do companies ensure their data, and the data of their customers, is secure?
  - Support—How do IT departments support multiple devices, platforms, and applications?
- Additionally, IT leaders are concerned about access: Since mobile devices open new paths of intrusion, how do IT departments enforce policies to ensure that only authorized people have access to sensitive information, and how do they maintain regulatory compliance?



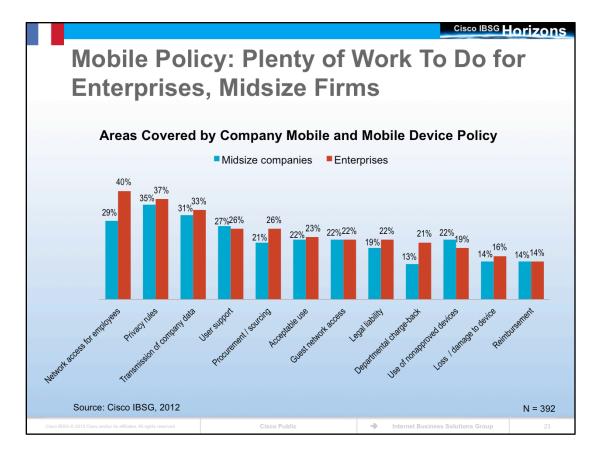
- One-third of French companies surveyed indicated that security was their primary concern with BYOD, which was consistent with companies surveyed worldwide. The perceived danger of BYOD to corporate network security is likely a major reason that companies in France and elsewhere in Europe have not embraced the trend as fully as others. With the exception of China, European countries are the most concerned with the negative effects of BYOD on the security of corporate networks. Interestingly, the concerns over network security have not made Chinese companies reluctant to embrace BYOD, since they believe the benefits far outweigh the potential costs.
- Other concerns in France were not nearly as strong, with "risks in regulatory compliance" (11 percent) coming in second, and "increased policy enforcement complexity" (10 percent) third.
- Technical aspects of supporting BYOD were not of major concern: "maintaining network performance" and "complexity of IT support" were ranked fairly low, at 8 percent each.



- Overall, there is strong support for enabling BYOD among corporate IT leaders. Nearly 90 percent of companies accept BYOD in some form, ranging from simply allowing employee-owned devices on the corporate network to full IT support for any employee-owned device. This proves once again how universal the BYOD trend has become.
- And 71 percent encourage IT by providing some level of IT support.
- European companies, however, are much less accommodating of employeeowned devices in the workplace.



- France was the only country surveyed in which companies that limit BYOD (51 percent) outnumber companies that enable it (49 percent).
- Not surprisingly, the countries in which IT leaders were least positive about the impact of BYOD – France, Germany, and the United Kingdom – policies are the most restrictive.
- The situation in France, in particular, is starkly different from that of the United States, Asian, and Latin American countries, in which 70 percent or more of companies interviewed provide IT support for some or all employeeowned devices.
- Brazil has the overall least restrictive policies, with 82 percent of companies supporting either select or all employee-owned devices.



- Another area that has the potential to restrict the potential benefits of BYOD is a lack of clarity around mobility policy, both as it pertains to BYOD and in general. Regarding the maturity of corporate mobile policy, enterprises have implemented more comprehensive policies in most areas than midsize firms. While this finding is not surprising, it speaks well for midsize firms that in many areas, the differences between them and enterprises are modest.
- On the negative side, for both corporate and midsize firms, there is plenty of work to be done before mobility policy can be considered robust.

Cisco IBSG Horizons

N = 4.892

Employees Want Freedom To Reinvent Their Work Style Through BYOD...

Employees want an any-device, anywhere work style (37%)

Employees want to do personal activities during work and work activities during personal time (35%)

Avoid usage restrictions of companyowned devices (31%)

- Employees are turning to BYOD because they want more control of their work experience, thus improving productivity and job satisfaction.
- Their first desire is device choice. They want to work on the device with which they are most comfortable, and they want to work wherever they need to be.
- Their second desire is to choose when they do what. They want the flexibility to undertake personal activities while at work and to do their work during nontraditional work periods such as nights and weekends.
- Finally, they want freedom to use the device the way they see fit, including which apps to download.

 $\mathbf{H}$ 

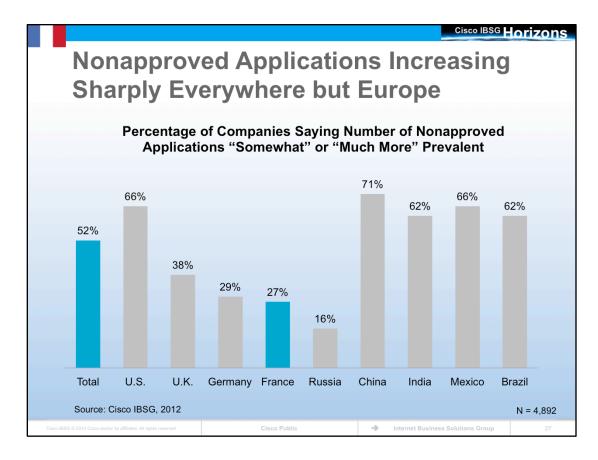
Source: Cisco IBSG, 2012



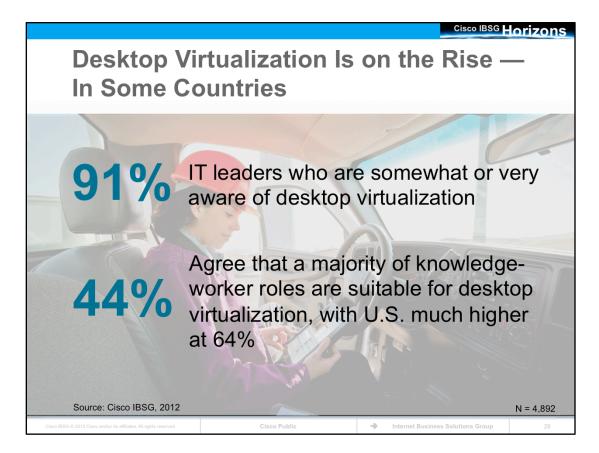
- By giving employees freedom to choose the devices, applications, and cloud services they use, work processes can be redefined. Employee-led innovation extends far beyond when and where to work.
- Through BYOD, employees can continually innovate in a multitude of ways, such as using cloud-based services to analyze and visualize data on a mobile device, discovering the perfect tool for managing complex workflows, or recording video meetings to improve execution when decisions are made.
- The potential for consistent bottom-up innovation is tremendous, and the tools are readily at hand: increasingly inexpensive, powerful devices; thousands of mobile applications with enterprise-level power and sophistication that cost only a few dollars; and application-development tools that nonexperts can use to quickly design their own custom applications.



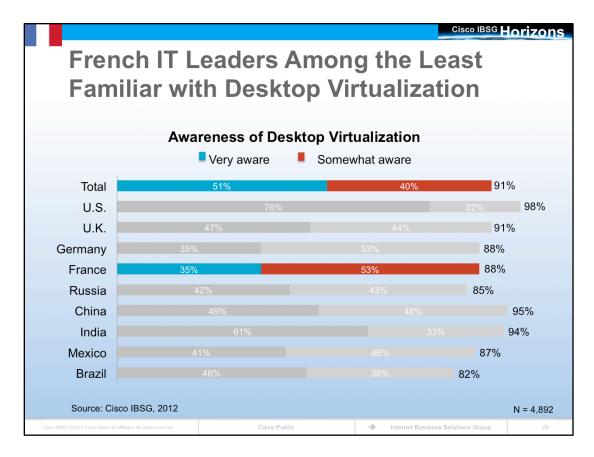
- Along with the growth of employee-owned devices, 52 percent of IT leaders say that nonapproved software applications and cloud services are "somewhat" or "much more" prevalent today than two years ago. It makes sense that nonapproved applications would increase, since employees do not simply want to use the device of their choice, but also the software and cloud services they prefer.
- European countries are seeing far less growth, perhaps because of policy restrictions that discourage them.



- As we can see, there is a stark difference in the prevalence of nonapproved applications between European countries and all other countries in our study. In France, only 27 percent of IT leaders saw increases in nonapproved applications compared to two years ago, while 34 percent saw no change, and 35 percent say they are actually seeing fewer. In contrast, 71 percent of IT leaders in China say nonapproved applications are on the rise.
- We may be seeing both *virtuous* circles (positive impressions of BYOD, resulting in more favorable policies, thereby producing enhanced benefits and increasing enthusiasm) and *vicious* circles (suspicion of BYOD, resulting in restrictive policies and muted impact, reinforcing the initial skepticism) at play.



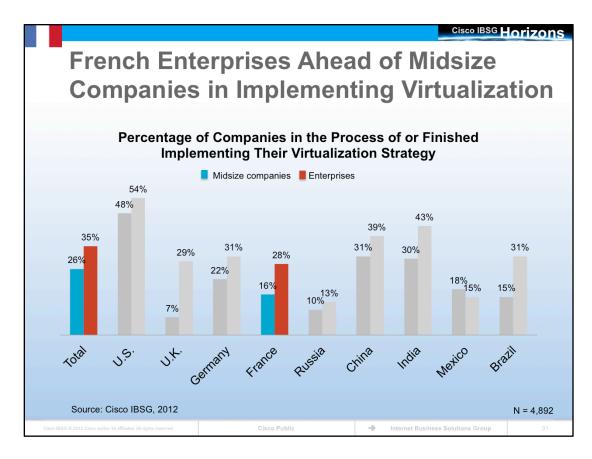
- This study also explored desktop virtualization, which is becoming increasingly popular—and which could potentially fit nicely with the BYOD trend.
- Desktop virtualization separates the desktop environment from the device and enables employees to get the same or similar experience regardless of where they are or which device they are using.
- This study found that desktop virtualization is very much on the minds of IT leaders. Of the IT leaders polled in this study, 91 percent are very or somewhat familiar with desktop virtualization.
- However, outside the United States, where 64 percent of IT leaders believe a majority of knowledge workers could benefit from desktop virtualization, companies feel virtualization has limited applicability for knowledge workers.
- Desktop virtualization is also sometimes called:
  - Virtual desktop infrastructure (VDI)
  - Hosted virtual desktop (HVD)
  - Desktop as a service (DaaS)
  - Server-based computing



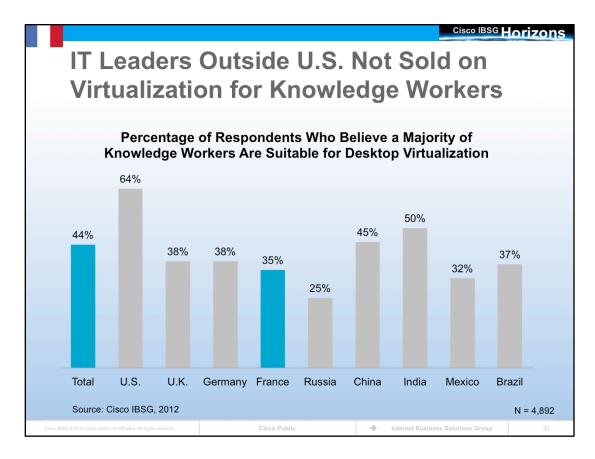
- For IT leaders in the United States and India, desktop virtualization is a wellknown concept. Elsewhere, less than 50 percent are "very aware," although nearly all have some familiarity.
- 88 percent of French IT leaders surveyed are aware of desktop virtualization, which is comparable to IT leaders across Europe.

Cisco IBSG Horizons						
And Are Implementing Virtualization Strategies Slowly Desktop Virtualization Strategy						
Total	5% 28%		39%		27%	
U.S.	4%	47%			15%	0
U.K.	- 4% 22%				30%	
Germany	6% 23%					
France	<b>5%</b> 20%		40%		32%	
Russia	1% 11%			48%		
China	1% 35%				27%	
India	13%				21%	
Mexico	2% 14%				25%	
Brazil	2% 19%				19%	
Fully implemented       Have a strategy, but not yet funded / implemented         In the process of implementing       No current strategy         Source: Cisco IBSG, 2012       N = 4,892						
Cisco IBSG © 2012 Cisco and/or its affiliates. All rights reserved.				Internet Business	Solutions Group	30

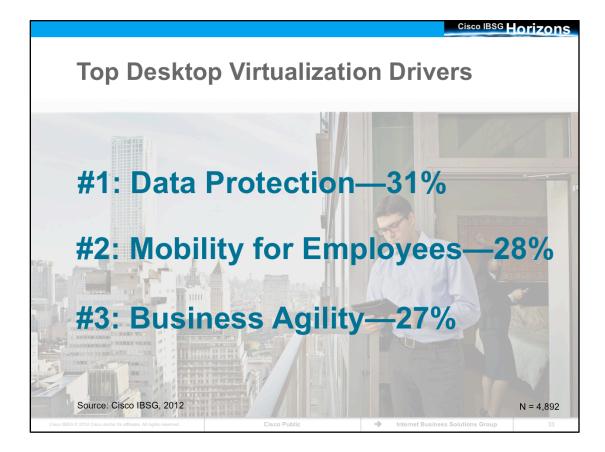
- In implementation of desktop virtualization, we see a stark difference between the United States and most other countries. A majority of U.S. companies have implemented desktop virtualization, or are in the process of implementing it.
- In France, only 25 percent have made similar progress.



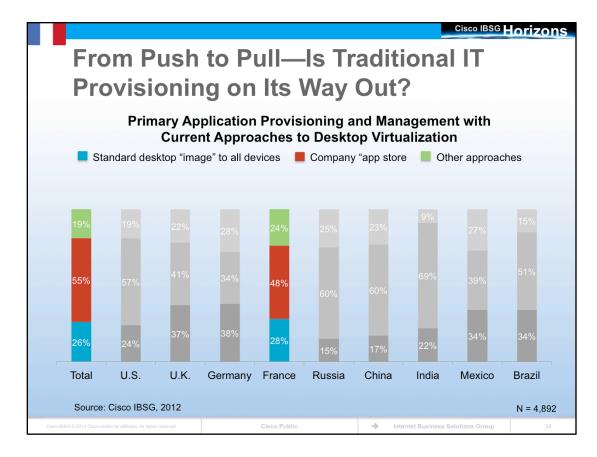
- For the most part, enterprises are well ahead of midsize firms in implementing desktop virtualization.
- In France, while neither have made strong headway, 43 percent more enterprises have implemented desktop virtualization than midsize firms.



- IT leaders in these countries are "behind" in implementing desktop virtualization because they believe it to be less applicable to knowledge workers than do their counterparts in the United States.
- France is on par with most other countries in believing that fewer than half of knowledge workers are suitable for desktop virtualization.
- Overall, French firms believe that 43 percent of knowledge workers would benefit from desktop virtualization, compared to 45 percent in the United Kingdom, 44 percent in Germany, and 36 percent in Russia.



- Most IT leaders recognize that employees in their organization could benefit from desktop virtualization (44 percent believe half or more of their employees could benefit), but desktop virtualization poses challenges. The top three concerns are:
  - -Data protection: How does the enterprise ensure only the right people have access to sensitive company and customer data?
  - -**Mobility for employees:** Enabling employees to work from wherever they are, rather than being constrained to a desk or campus, including telework.
  - -Business agility: The speed with which companies can roll out software updates and platforms.



- IT leaders are accustomed to pushing approved devices and applications on to employees—when a new employee starts, he or she has a laptop and a standard set of office applications set up and ready to use. But with employees bringing their own devices, IT departments are changing the way they provision and manage devices.
- IT leaders who accept this sea change are embracing it by supporting nonstandard applications and distributing them through a corporate app store.
- In France, the "app store" approach is the primary way that applications are deployed in midsize and enterprise companies.
- French midsize companies are more likely to use the "app store" approach than enterprises (64 percent vs.. 42 percent), and enterprises are conversely more likely to push a standard image (50 percent compared to 35 percent of midsize firms).



- As we have seen, BYOD is happening in companies across the world, at both midsize companies and enterprises. It is not an emerging trend, but a fact.
- There are varying degrees of support and enthusiasm, however. The United States, Asia, and Latin America are bullish on the prospects of BYOD, and are willing to give employees more control.
- By giving them control, companies can allow employee-led innovation to unfold, as knowledge workers find better ways of performing their typical tasks, and even expand into higher-value work. For example, the ability to download powerful data analytics applications that formerly were provided only to specialists can now help any employee add value in new ways.
- Companies must guard against rising mobility costs.
- They must also face new challenges in how they secure their networks and support mobile devices in a BYOD environment.
- For many companies, better, more comprehensive mobile policies could help deliver BYOD with greater security at a lower cost.
- Desktop virtualization could also help. But IT leaders outside the United States see desktop virtualization as less applicable to knowledge workers, and are not implementing it as extensively.

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