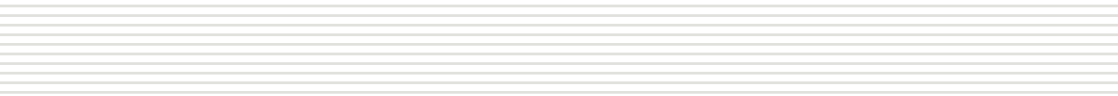




2011

Virtualization and Evolution to the Cloud Survey

DENMARK RESULTS



CONTENTS

Evolution of IT	4
Methodology	6
Focus.....	8
Finding 1: Gaps between expectations and reality reveal market evolution.....	9
Finding 2: Increasing focus on business-critical applications	12
Finding 3: Quality of service challenges emerge as top priorities	14
Finding 4: IT and business executives out of synch on the potential.....	16
Finding 5: Most organizations lean heavily on third-party service providers.....	18
Key Recommendations	20

THE EVOLUTION OF IT

Agility. Efficiency. Resiliency. These goals are what enterprise IT strives for today. Organizations require a more nimble approach to IT management that quickly adapts to rapid changes in demand, where new infrastructure deploys in days, not months. Meanwhile, the boardroom is holding the line on budgets and staffing levels.

Given these challenges, it is not surprising that enterprises are increasingly utilizing new technologies to meet these increasing demands. Virtualization is the means of ushering in a new, productive era of cloud computing, driven by this need for cost management and increased agility. Globally, more than 75 percent of large enterprises are at least discussing server virtualization and hybrid cloud computing platforms. And yet, because these are new technologies and the market is still maturing, many implementations are still focused on less critical applications. The real benefits will come as enterprises start to move business-critical applications to virtualized or hybrid cloud environments.

The **2011 Virtualization and Evolution to the Cloud Survey** explores the goals, attitudes, challenges and experiences of large enterprises around the world as they stand on the brink of moving business-critical applications to virtualized and hybrid cloud environments.



METHODOLOGY

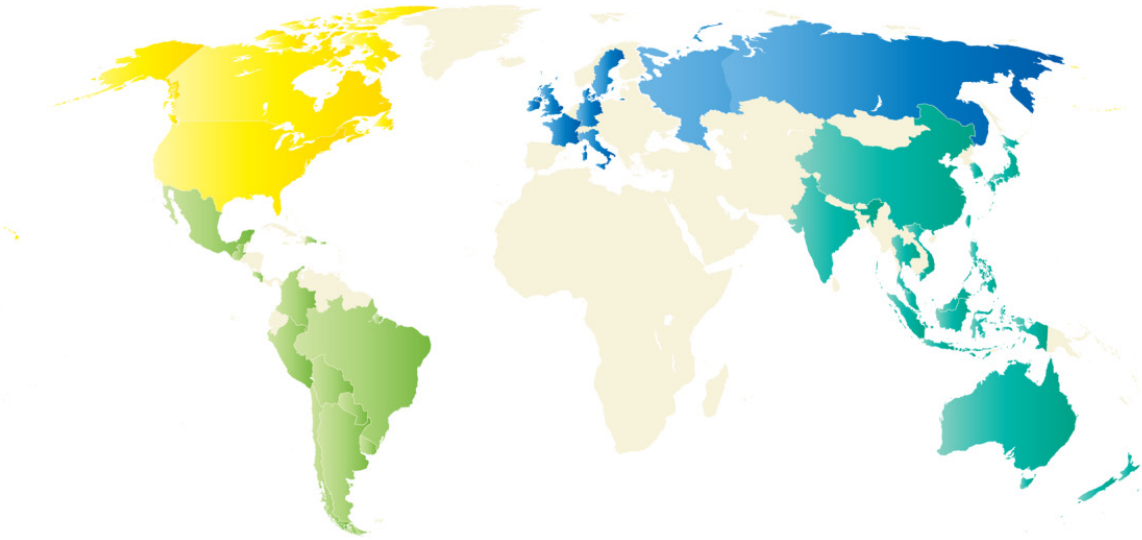
Symantec commissioned Applied Research to field the **2011 Virtualization and Evolution to the Cloud Survey** by telephone in April of 2011. They contacted 3,700 enterprises of various sizes in 35 different countries. The results in this report are based on 100 responses within Denmark.

- Small enterprises (1,000 to 2,499 employees)
- Medium enterprises (2,500 to 4,999 employees)
- Large enterprises (5,000 or more employees)

Respondents represented a wide range of industries and included a mix of C-level (CIO, CISO, etc.) executives (29 percent), IT management who were primarily focused on strategic issues (38 percent), and IT management primarily focused on tactical issues (33 percent).

The overwhelming majority of respondents (51 percent) were 31 to 49 years of age, with the rest split between those less than 30 (30 percent) or older than 50 (20 percent). Nearly all (87 percent) were male. The typical respondent had worked in IT for 10 years.

Twenty-three percent reported their companies were shrinking in terms of revenue, while most respondents (51 percent) reported growth.



North America	
United States	400
Canada	200

Latin America	
Brazil	125
Mexico	125
Colombia	40
Argentina	35
Chile	25
Costa Rica	15
Peru	5
Dominican Republic	5
Guatemala	5
Puerto Rico	5
Uruguay	5
Bolivia	5
Paraguay	5

EMEA	
United Kingdom	200
Germany	200
France	200
Italy	200
Russia	100
Sweden	100
Denmark	100

APJ	
China	200
India	200
Japan	150
South Korea	100
Indonesia	100
Australia/New Zealand	150
Taiwan	100
Thailand	100
Malaysia	100
Philippines	100
Hong Kong	100
Singapore	100
Vietnam	100

FOCUS

The survey focused on five areas of virtualization and cloud:

- Server virtualization
- Storage virtualization
- Desktop/endpoint virtualization
- Private Storage-as-a-Service
- Private or hybrid cloud computing

We asked about awareness, adoption, goals, challenges and attitudes for each of these technologies.

According to the results, most enterprises follow the same pattern of adoption. First, organizations implement server virtualization. Later they add other types of virtualization, such as storage and desktops/endpoints. Finally, they implement private Storage-as-a-Service, private cloud and/or hybrid cloud.

What follows is the story of how this evolution from virtualization to the cloud is playing out in enterprises around the globe.

FINDING 1

Gaps between expectations and reality reveal market evolution.

By implementing virtualization and cloud computing technologies, enterprises hope to realize a long list of potential benefits. Reduced expenses, improved scalability, better performance and increased disaster recovery preparedness were just a few of the goals our respondents hoped to achieve.

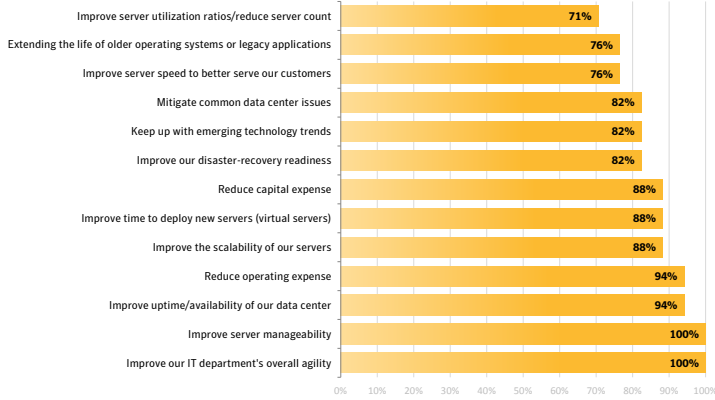
However, as is often the case, the survey revealed a gap between these expectations and reality. We asked respondents what their goals were at the time they implemented server, storage, and endpoint virtualization; private Storage-as-a Service; and hybrid/private cloud. We also asked those who have implemented each of these technologies about the benefits that were actually realized following implementation. The difference between those who anticipated a goal and those who realized it forms the gap, which was surprising in some cases.

- In terms of server virtualization, this gap was fairly small. The majority of enterprises had realized improved IT agility, improved server management and improved uptime. In fact, on average, organizations performed four percent *better* than expected, showing how effectively organizations are anticipating the results of virtualizing servers.
- In other areas, however, this gap was much larger. As businesses looked to implement storage virtualization, their most important goals were reduced capex, keeping up with emerging technology trends and improved IT agility. Unlike the case of server virtualization, however, the average gap in this area was 15 percent, showing a lack of maturity in this segment.
- When it comes to desktop/endpoint virtualization, this gap was 12 percent, which is significant in that the most important goals were better management of application licenses, simplifying application delivery and solving application compatibility.

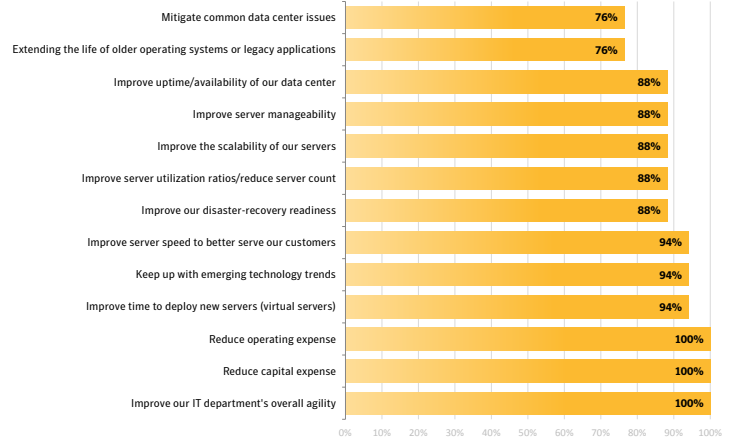
- Private Storage-as-a-Service projects fared among the worst of all, second only to hybrid/private cloud computing. Enterprises hoped to achieve improved uptime, improved data center scalability and improved disaster recovery readiness. These goals proved particularly difficult to achieve, with an average 23 percent gap between the goals and reality.
- By implementing hybrid/private cloud computing, respondents had hoped to achieve better time to provision new resources. The average gap between this and other expectations and reality, however, was 26 percent.

What can we learn from this? For one thing, we can see the varying maturity of several types of virtualization. Server virtualization is much more mature, as evidenced by the close match between survey respondents' pre-implementation expectations and the end results. We also see how expectations are unlikely to be matched by reality until IT organizations gain sufficient experience with these technologies to understand their potential.

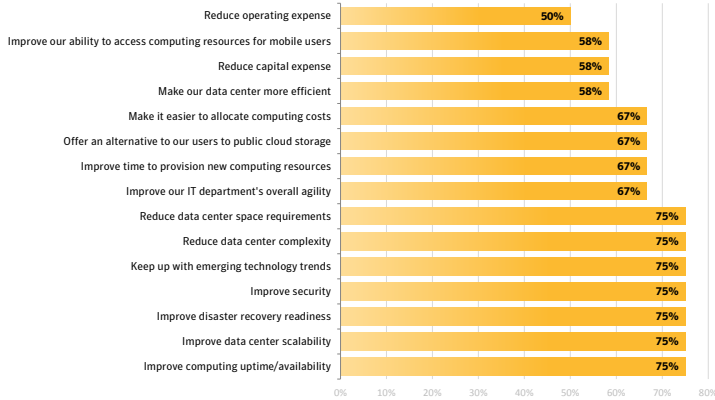
Q22: Thinking back to when you first considered implementing server virtualization, how important were each of the following goals at the time you originally decided to implement server virtualization?
(Somewhat/Completely important)



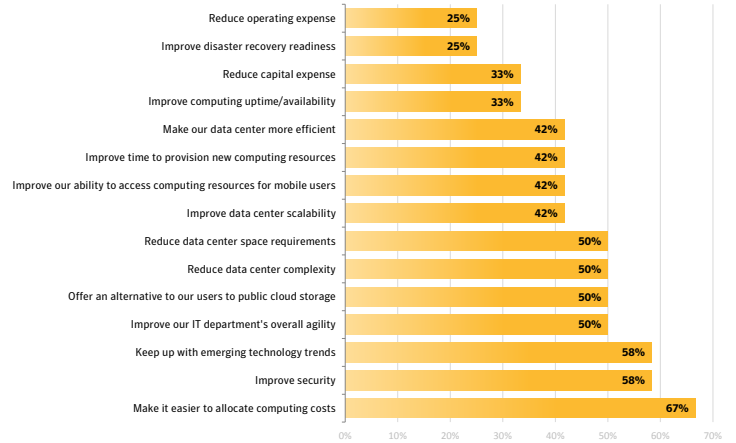
Q23: Which of these goals were actually achieved from deploying server virtualization?
(Somewhat/Completely achieved)



Q61: Thinking back to when you first considered implementing private storage-as-a-service, how important were each of the following goals at the time you originally decided to implement private storage-as-a-service?
(Somewhat/Completely important)



Q62: Which of these goals were actually achieved from deploying private storage-as-a-service?
(Mark all that apply.)



FINDING 2

Increasing focus on business-critical applications.

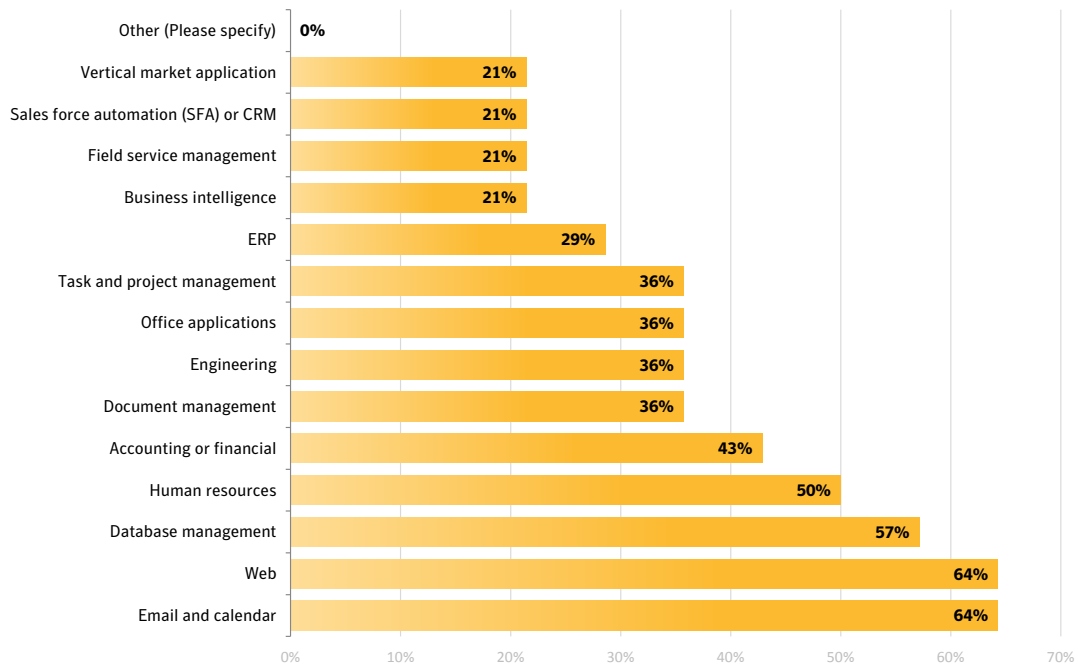
Making such a drastic change in IT operations means that many businesses are moving forward with caution. They want to enjoy the benefits of virtualization/cloud technology, but they are also wary of potential problems. If there is a risk of application downtime or data loss, they would prefer it happen to a less critical portion of their operation. With this in mind, enterprises are likely to utilize test and development environments to gain some experience. As they become comfortable with the technology, they are then more willing to place sensitive applications into a virtualized/cloud environment.

Among enterprises currently implementing virtualization, business-critical applications are now beginning to come into the spotlight. Enterprises are most willing to virtualize accounting, database and document management applications. But one-third or more of them are planning to implement virtualization within the next year for business-critical applications such as HR, accounting and ERP, showing that they are becoming more used to the technology.

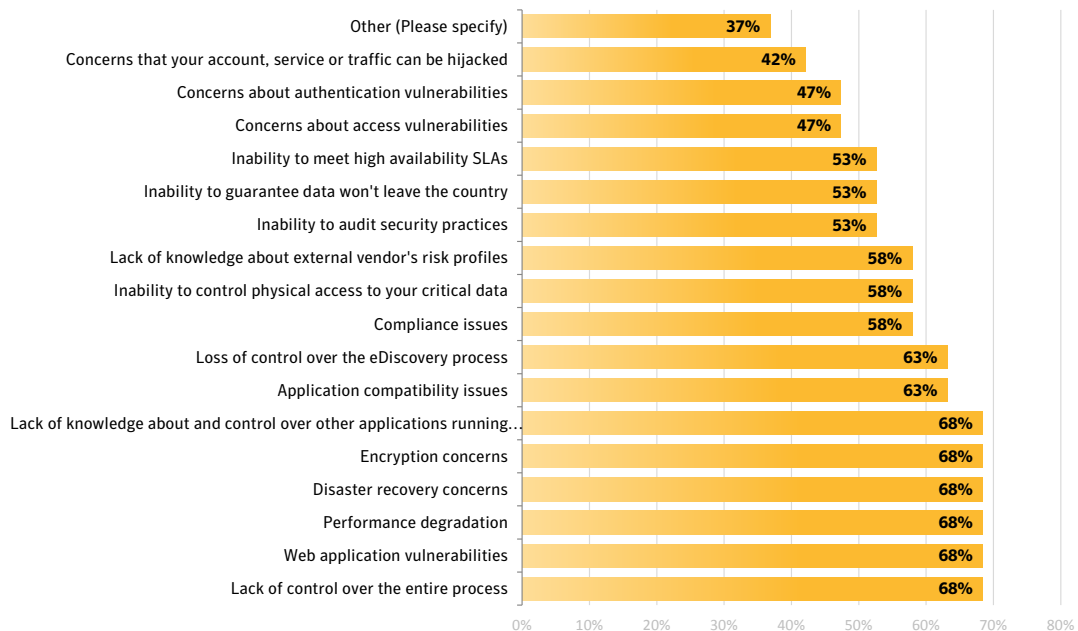
But with hybrid/private cloud implementation, however, enterprises are more hesitant. Respondents reported an average of just 21 percent of these business-critical applications such as ERP, accounting and CRM are in hybrid/private cloud environments.

Why the lack of adoption? Among those currently implementing hybrid/private cloud computing, the most common concerns regarding placing business-critical applications into the cloud are related to lack of control over the process, web application vulnerabilities and performance degradation. Disaster Recovery concerns were expressed by 68 percent of respondents, and between 40 and 58 percent expressed concerns over loss of physical control over data and fear of hijacked accounts or traffic. Other concerns involve performance and compliance issues.

**Q19: For which kinds of applications are you implementing virtualization now or within the next 12 months?
(Mark all that apply.)**



**Q80: How much does each of the following risks weigh in keeping various constituents from being more confident about placing mission-critical applications on a hybrid/private cloud?
(Somewhat/Extremely large factor)**



FINDING 3

Quality of service challenges emerge as top priorities.

While virtualization/cloud computing can help streamline operations and save money, sacrificing performance is not an option. Any gains in other areas will be negated if customers and employees are unable to work within a fast, secure environment that provides maximum uptime.

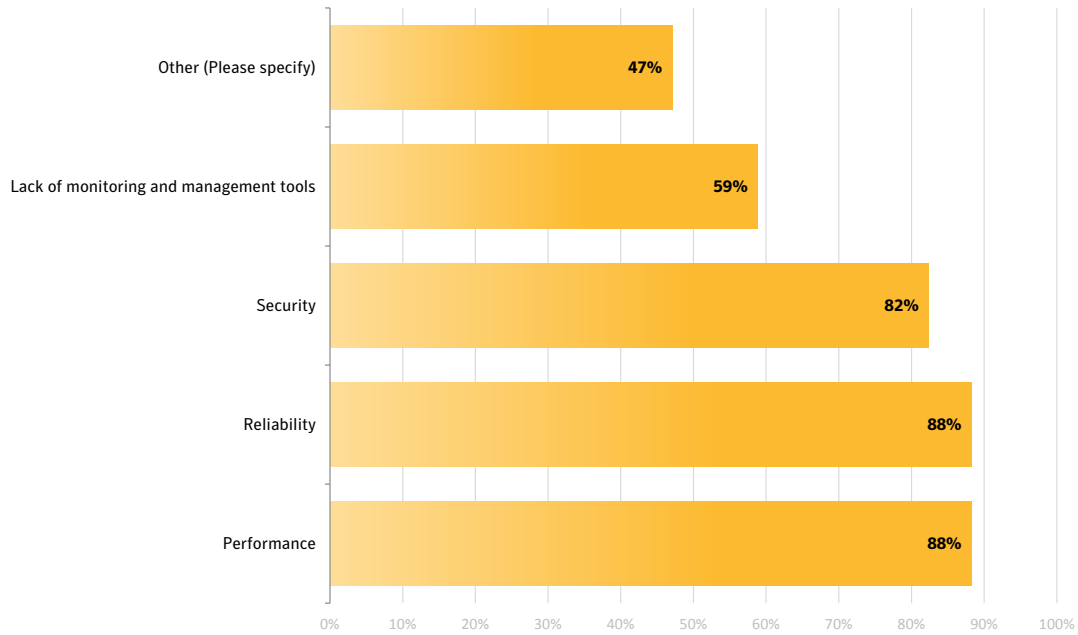
Performance can be a factor that either drives virtualization or inhibits it. Among organizations that have implemented storage virtualization, 71 percent of respondents stated that one of their goals in doing so was to improve storage performance or speed. In contrast, more than two-thirds of enterprises list performance degradation as a somewhat/extremely large factor in their hesitation to place business-critical applications into a private cloud.

Security is another quality issue that can have a serious impact on an organization's decisions to implement – or not implement – new technology. More than three-quarters of those who have implemented server virtualization stated that security was a large factor in hesitating to place business-critical applications on their virtualized servers. At the same time, 47 percent of enterprises currently considering Storage-as-a-Service list improved security as a somewhat or completely important goal.

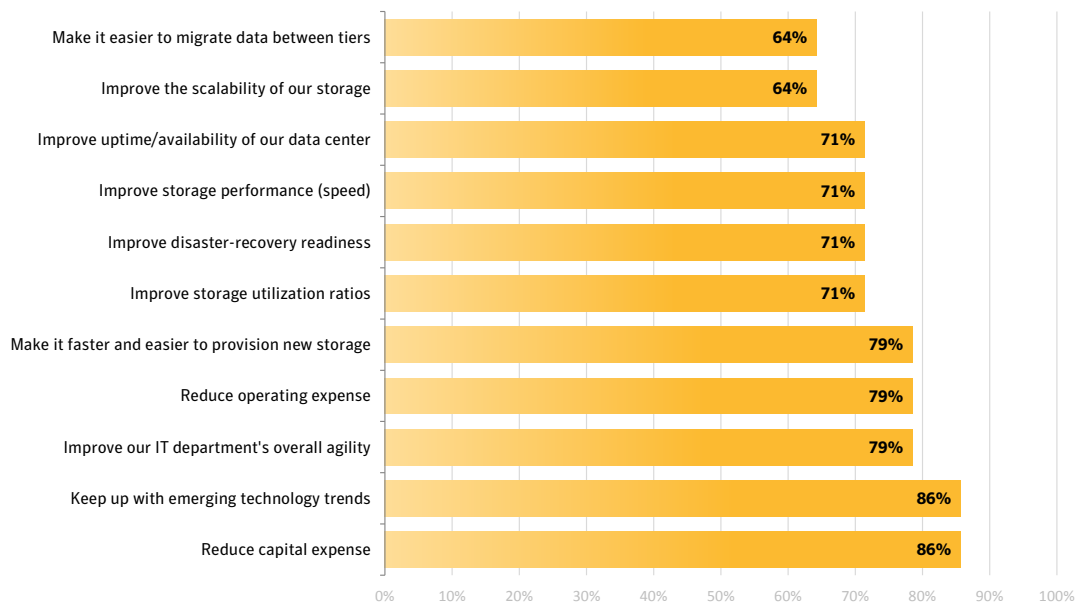
Also vital to an organization as it considers virtualization/cloud technologies is reliability, including uptime and disaster recovery. Among enterprises that have implemented server virtualization, reliability was the number one concern, tied with performance and ahead of security. And yet almost half of respondents currently considering server virtualization stated improved availability as a goal.

This leaves us with a conflict. On the one hand, organizations expect the quality of their service to improve as they implement virtualization and cloud computing. On the other hand, there is a fear among enterprises that adopting these technologies will actually interfere with the performance, security and reliability of IT services.

Q31: How much do each of the following risks weigh in keeping various constituents from being more confident about placing mission-critical applications on virtualized servers? (Somewhat/Extremely large factor)



Q40: Thinking back to when you first considered implementing storage virtualization, how important were each of the following goals at the time you originally decided to implement storage virtualization? (Somewhat/Completely important)



FINDING 4

IT and business executives out of synch on the potential.

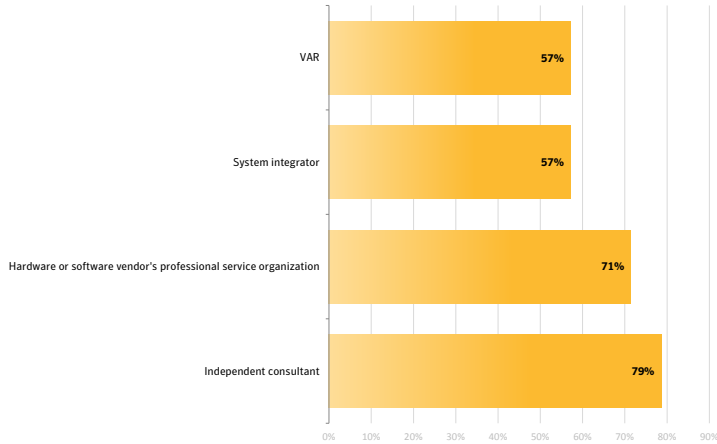
Why do some enterprises expect improved quality of service from virtualization and cloud computing, and others consider the adoption of these technologies to be a liability? One possibility is the disconnect between members of IT and executives within the company.

The survey asked respondents how willing various constituents within the organization would be to place business-critical applications in a virtualized or cloud environment. The CIO and CFO are the most cautious group when it comes to placing these applications on virtualized servers, for example. In fact, the CFO is the most hesitant, which is interesting considering the potential for reducing expenses. The server group, by contrast, is far more willing to adopt the technology. Interestingly, even the application owner is significantly more willing to implement virtualization than the C-level executives. When asked about putting these applications into a private/hybrid cloud, the CEO is also reluctant, even more so than the CIO and CFO.

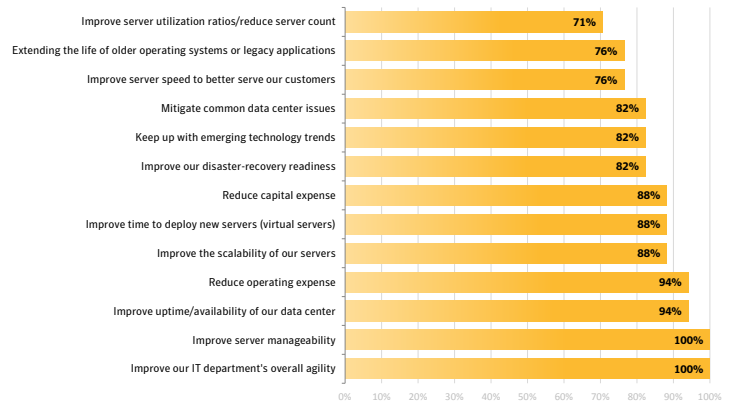
Why are they concerned about the adoption of these technologies? We found the main concerns about placing business-critical applications in virtualized and hybrid cloud deployments are performance, reliability and security. While these may seem sensible answers, consider the results of the survey. Remember that among those who deployed virtual servers, for example, the majority of them met their performance goals .

These results suggest that better communication between IT staff and executives involved in the decision-making process may allow everyone to be on the same page when it comes to understanding the potential risks and benefits offered by virtualization and cloud computing. IT staff will be able to address management concerns. And, with a better understanding of what IT is doing, management may be more willing to approve resource requests.

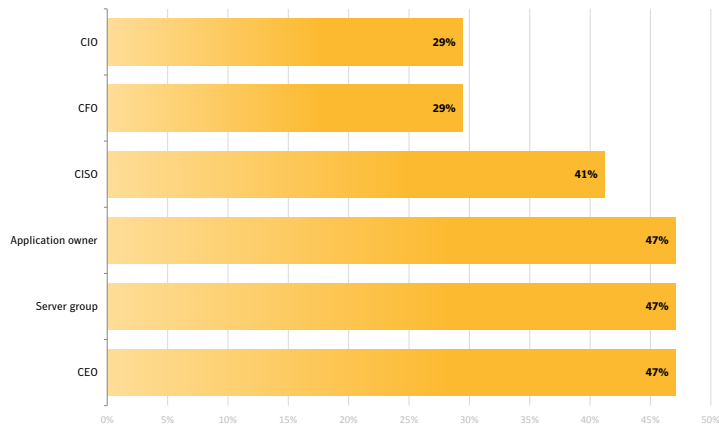
Q21: Please indicate how much you are relying on the following external resources to implement server virtualization: (Rely on quite a bit/completely)



Q22: Thinking back to when you first considered implementing server virtualization, how important were each of the following goals at the time you originally decided to implement server virtualization? (Somewhat/Completely important)



Q30: How would you characterize the motivation of various constituents in your organization to moving mission-critical applications from physical servers to virtualized servers? (Somewhat/Extremely open to doing so)



FINDING 5

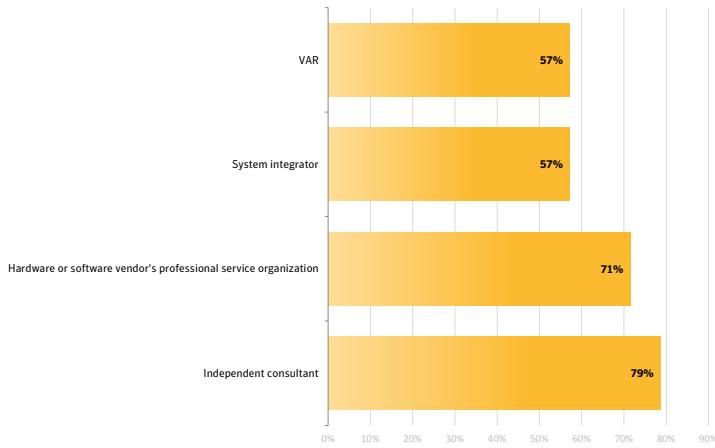
Most organizations lean heavily on third-party service providers.

When it comes to actually deploying virtualization and cloud computing solutions, enterprises often find it a daunting experience. In fact, most of them find it necessary to enlist the help of a third party in order to fully implement their solutions.

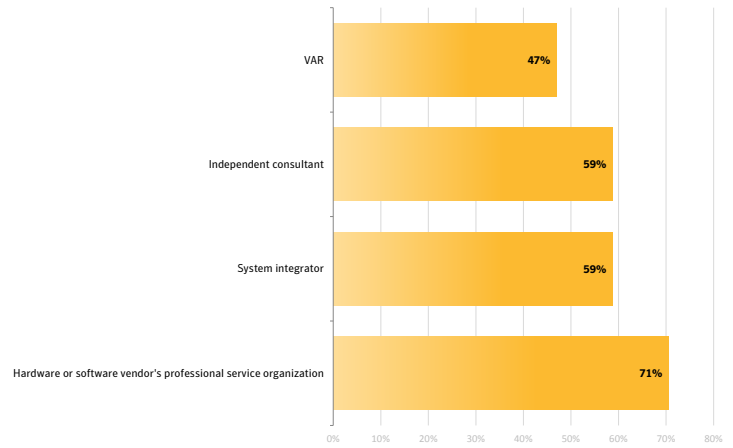
We asked respondents about their use of four different varieties of external resources in implementing each of the five areas surveyed: systems integrators, vendors' professional service organizations, independent consultants and value-added resellers (VARs).

In each case, vendor solutions and independent consultants were utilized more than systems integrators and VARs. Furthermore, to a degree, the use of these services corresponds with the maturity of the segment in question. For example, server virtualization is one of the most mature of the IT services in question, and is therefore a more likely area in which in-house expertise will most suffice. Private Storage-as-a-Service and endpoint virtualization, on the other hand, required much more third-party assistance. The exception here is hybrid/private cloud computing which, though it appears to be the least mature of the technologies in Denmark, is also the technology in which enterprises were least likely to use a third-party service for implementation.

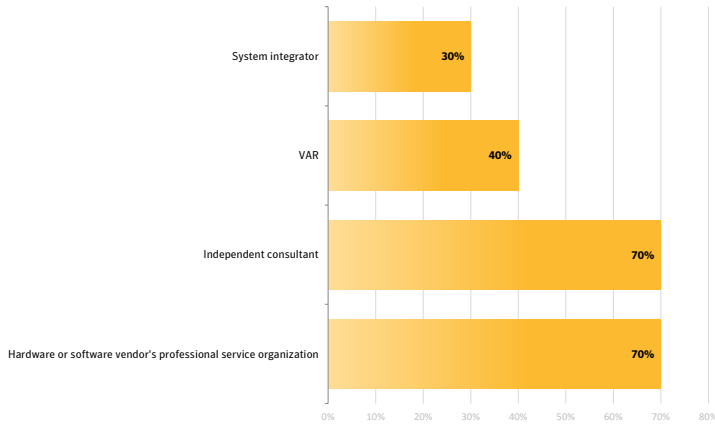
Q21: Please indicate how much you are relying on the following external resources to implement server virtualization: (Rely on quite a bit/completely)



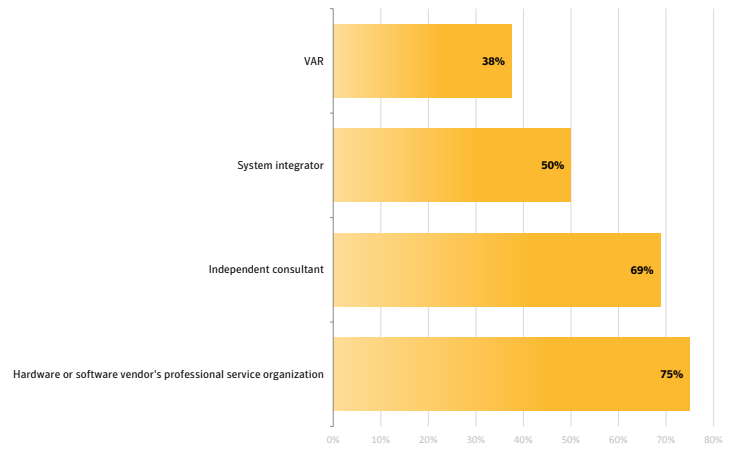
Q39: Please indicate how much you are relying on the following external resources to implement storage virtualization: (Rely quite a bit/completely)



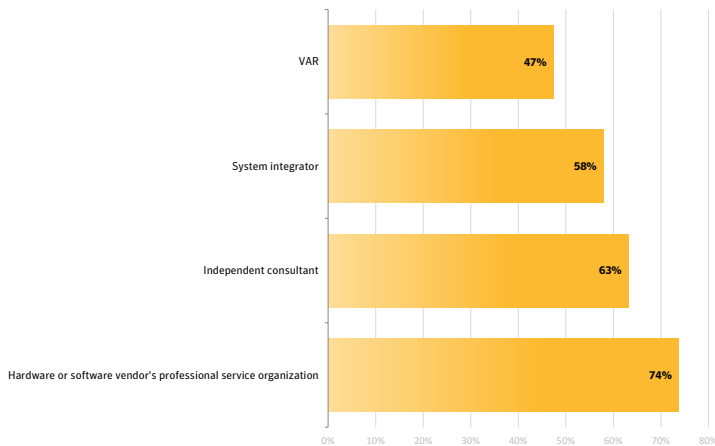
Q49: Please indicate how much you are relying on the following external resources to implement desktop or endpoint virtualization: (Quite a bit/Completely)



Q60: Please indicate how much you are relying on the following external resources to implement private storage-as-a-service: (Quite a bit/Completely)



Q81: Please indicate how much you are relying on the following external resources to implement private cloud: (Quite a bit/Completely)



KEY RECOMMENDATIONS

It's apparent that virtualization and cloud computing are quickly becoming indispensable tools for IT. At this point it's largely a matter of when, rather than if, an organization will adopt these technologies. While there remain many obstacles to overcome, Symantec would like to make the following recommendations to help make the journey to the cloud as smooth as possible.

Ensure alignment between IT and executives in virtualization and cloud initiatives. It is important to show that you can address C-level concerns such as security and availability. Show that their concerns, while important, can be successfully overcome by leveraging existing best practices and robust solutions that ensure valuable information and critical applications are protected and highly available.

Don't operate in a silo when it comes to cloud computing. Virtualization and cloud initiatives are most successful when implemented as mainstream, comprehensive IT initiatives. Because they involve all aspects of IT (servers, storage, network, applications, etc.) they can fail when managed as siloed "special projects." Rather, treat cloud as an IT-wide initiative with all departments included in planning and implementation.

Modernize your existing infrastructure. Before you're ready to implement hybrid/private cloud, make sure you are leveraging the existing infrastructure to achieve the same efficiencies and then modernizing it as needed. Convert static servers, storage and networking into a virtualized pool of resources. Replace static provisioning with self-service provisioning, and make sure to implement monitoring and metering to demonstrate value to the business.

Set realistic expectations and track your results. Remember that despite the hype, cloud is a new and still maturing market. Do your homework to set expectations that are realistic, then follow up and track results to identify ways to improve project efficiency going forward.

