# HP DCT Study

# Research Summary

**March 2008**

**Penn, Schoen & Berland Associates, Inc.**

## Research Objectives

The objective is to understand how business decision-makers and technology decision-makers think about and approve data center transformation – including perception of key industry players they might select to facilitate data center transformation, hardware, services and software needs, attributes of an ideal vendor and perceptions of core HP offerings.  The research will explore:

- Respondents' **evaluation** of their current data centers, including scalability to address future data needs, etc.
- Respondents' **awareness** of the need to conduct data center transformation; contrasting CEO and CIO audiences.
- Compare respondents' **perceptions** of how and why data center transformation would benefit them, how urgent it is, when and how the process should begin
- Compare respondents' **concerns** re: barriers and hopes for benefits of data center transformation
- Determine the **key decision drivers** for business decision makers and technology decision makers in selecting vendors to facilitate data center transformation.
- Understand the **variability in those decision drivers** and attitudes CEOs and CIOs have about the role vendors should play in the data center transition/transformation process.
- **Identify key cost saving and efficiency processes** of which data center transformation could be an option.

## Methodology

Penn, Schoen and Berland conducted 161 IDIs internationally, with 78 Business side respondents:  CEOs, Chairmen, Presidents (and related job titles) and 83 Technology side respondents:  CIOs, Presidents of IT (and related job titles).  The focus of the research was executives in Enterprise level companies (approximately 1,000+ employees) and Mid-Market companies (approximately 500-1,000 employees).  Approximately 75% of the respondents were from Enterprise level companies and 25% were from Mid-Market companies.  Regions included: North America (United States and Canada), Western Europe (UK, France, Germany), Eastern Europe (Russia, Czech Republic), Asia-Pacific (India, China, Japan, Korea, Singapore, Australia), and Latin America (Brazil, Mexico).

|  | All | North America | Western Europe | Eastern Europe | Asia Pacific | Latin America |
|---|---|---|---|---|---|---|
|  | n-size | n-size | n-size | n-size | n-size | n-size |
| **CEO** | 78 | 25 | 16 | 7 | 25 | 5 |
| **CIO** | 83 | 29 | 19 | 6 | 23 | 6 |

## Summary of Interview Results

For both CEOs and CIOs improving performance (via system speed and availability and stability), mitigating risk (with security, redundancy, and disaster recovery plans), and maximizing ROI in support of business needs are priorities that impinge on every aspect of their data center operations and decisions.   In general, respondents indicate that they have little motivation to change their current solutions if they are not experiencing problems.  As one CIO respondent put it:

> *"I would say it has been responding to all demands; there is nothing we didn't manage to respond to through the data center.  [The state of our data center has a] positive [impact on our ability to meet mission critical goals]." – CIO, BR*

Another CIO commented:

> *"[The CEO] told me one time that if he's not hearing anything about IT then we're doing a good job..." – CIO, US*

However, a data center that cannot meet expectations in these areas is a data center ripe for change since most respondents recognize the devastating repercussions that data center failure would have on their mission critical business goals.

> *"Our entire company would fail. It would obstruct our contact with clients and the industrial process." – CIO, CZ*

Yet, the form that the change takes, the level of priority it is given and the speed with which it happens varies greatly depending on the role IT and more specifically the data center plays in the company.  Two major schools of thought regarding data centers emerge:

1. Companies who view the data center as an operational support structure for business processes
   - o Use the data center primarily for operational tasks such as transaction reporting
   - o May supplement current technology by adding additional components or new centers to meet expanding business needs
   - o Would need the CIO to build a strong case to management based on operational considerations such as cost cutting, security flaws or equipment failure to receive stakeholder buy in and approval for transformation
   - o Expect transformation to result in a measurable financial or performance outcome
   - As one CIO stated: *"[When] you are talking about a quarter of million dollars and they are thinking...to get a new disk drive for my PC at home it was $49 and it's such and such size, it's really hard for somebody to grasp that...it's not a question of them understanding that data grows but for them to get a good conceptual understanding of why it's growing at the pace it is..." – CIO, US*
2. Companies who recognize that an efficient data center can drive value for the overall business by effectively utilizing technology to maximize the potential of business and intellectual resources

- o Want to go beyond using their data center for basic transactions, reporting, and storage to building or acquiring tools that allow them to combine, view and use data in new ways
- o Often looking to expand capacity, flexibility, speed and availability through the addition of hardware such as Blade servers and tools and techniques such as virtualization
- o Understand that the case for transformation is rooted in expanding opportunities for growth, improving performance and reducing risk while maintaining business continuity
- o Believe transformation results in increasing efficiency, improving business processes and developing IT as a competitive advantage
- *"Better productivity, better cost reduction and people to value add …improvements would allow us to grow more rapidly…it would also allow us to partner with vendors… getting best of breed and long term focus and assistance, so that we are reducing our risk." – CIO, Australia*

More than 88% of respondents in each audience agree that "Over the last 40 years the data centers that power the world's economies have evolved into a complex patchwork of interconnected systems." **In fact, more than a third – 33% of CEOs and 39% of CIOs – consider their current data centers incapable of dealing with the rapidly growing demand for services and applications that their company will require in the next 2-5 years as a result of the "information explosion."** While the majority of respondents spend less the 20% of their organizations total IT budget on maintaining data centers, over one-third expect this level to increase over the next five years and nearly half believe they will stay at current levels.

Respondents see themselves facing challenges in the form of: the changing business environment, capacity, disaster recovery and redundancy, security, system stability and availability, investment and costs, the physical environment, and energy availability and cost. 37% of CIOs cite cost considerations as the key driver that would be the most likely to make their company consider data center transformation. Another 33% indicated operational concerns such as improved performance, reliability, and business continuity.

**Among CIOs, nearly half – 47% – plan to "Reduce the number of data centers through transformation** – improving technology, increasing productivity and lowering overhead and management costs." However, the majority of CIOs do not think the process is particularly urgent, in fact 49% said it was not very to not at all urgent. Some of those interviewed who had a limited sense of urgency had just updated their data centers. Some knew they needed to update but were still unmoved, while others felt that their existing center adequately met their needs. Of those CIOs who do plan to undertake the transformation process, 28% expect the process to start in the next 6 months.

**58% of CEOs and 52% of CIOs strongly agree that "data center transformation is a CEO decision executed by a team.** If our team (CEO, CFO, etc.) doesn't support the process it will fail." Some CIOs specified that the *"CEO should play a strong leadership [role] and provide an*

*initiative in the data center transformation process." – CIO, JP.*  Others saw LOB (Line of Business) involvement in the implementation and testing stage is as integral to a successful transformation. *"From a business perspective, they are our clients.  Therefore they need to be consulted to be sure that the solutions that we are designing meet their future requirements.  If their requirements are rapidly changing, my solutions need to meet those requirements." – CIO, UK*

63% of CEOs agreed with the idea that "Any change [to a data center] requires scores of specialized IT people to manage the process…" CIOs were more divided, 52% agreed while 48% did not.  Some objected to the use of the word 'scores' when speaking to the interviewers indicating that it was perhaps misleading – a numeric overstatement.

**CIOs are split on whether they feel the transformation can be managed in-house or if it needs to be outsourced.  51% of CIOs say they have the skills in-house already while 49% would need to seek outside assistance either from training or contracts.**  Ideally for CIOs, transformation would be a carefully planned process that included support from key stakeholders and a selection of best-in-class resources both internally and externally.

> *"It will be site by site, looking at their needs, and modifying according to that. It will be a call to tender or a contract with an external company, a public call to tender. We will ask for offers from different companies and choose from this which is the most interesting."*
> *– CIO, FR*

According to respondents the three most critical barriers to overcome in the transformation process are: 'Lack of sufficient capital budget to initiate project/make initial investments' followed by 'concerns about move and migration risks' and 'Potential disruption to the business.'

Most CIOs anticipate that the biggest benefit of data center transformation will be  that they are 'More able to meet future demands for increased data center capacity' flowed closely by 'Lower operational costs from improved control and easier management of the physical and virtual assets within the data center.' More than 67% of CEOs would hope to see a return on investment (ROI) in data center transformation within 2 years and CIOs are aligned with that timeline.

Respondents typically think of their data centers as a physical space that contains technology solutions, only 9% of CEOs and 7% of CIOs would define it as a virtual entity.  More than half say their company currently has two or more data centers.  Decisions about where data centers are located are commonly based on the needs of local business units.

Both CIOs and CEOs are highly satisfied with their data center solutions.  Respondents have a general perception that their current data center will be able to meet their needs going forward.  However when the case for change is presented in terms of overcoming financial or operational challenges, most do see value in data center transformation.

# Detailed Findings

## Role of Data Centers

CEOs top priorities for IT at their companies revolve around maintaining a high level of performance with minimal exposure to risk in support of business goals. In the field of performance CEOs are particularly concerned with speed, accessibility and the availability of information. They would like standardized, uniform systems that are efficient, user friendly and offer tools to help the business be more competitive including automation, reporting and management information resources. To mitigate risk they want a high level of security, redundancy and disaster recovery plans to reduce the risk of lost data.

**[CEO only] What are your top three priorities for IT in your company?**

**PERFORMANCE**
### *Speed and Ability to Access Information*
- *"I would say first of all is to give good reliable, accessible information, second, would be user friendly for our staff." – CEO, US*
- *"The accessibility of the information, the speed of being able to get information from the system, and the user-friendliness of the system." – CEO, US*
- *"Rapidity. Joint ownership. Convenience." – CEO, JP*
- *"Speed, Accuracy…." – CEO, KO*
- *"1) Improving on availability and uptime 2) Improving processing response time 3) Remote backup" – CEO, SG*
- *"Right information, agility and a practical access." – CEO, MX*

**SUPPORT BUSINESS GOALS**
### *Business Process Improvement-Meets Business Needs*
- *"Efficiency of operations so we can be more cost competitive to our customers; continued development of software to provide us value and add competitive positioning; and lastly, internal support of the IS functions supporting the staff, making sure that's running well." – CEO, US*
- *"Management information. That one stands out by a mile." – CEO, UK*
- *"1. Market-driven provision of data 2. To provide the infrastructure for major trade fairs 3. State-of-the-art reports about business processes as accounting or data warehouse at any time" – CEO, DE*
- *"Automatic control of the following systems: 1. Financial 2. Manufacturing 3. Management" – CEO, RU*
- *"Able to respond to our critical needs. A more user friendly kind of formatting. Friendly retrieval of info and as good as a zero down time." – CEO, SG*
- *"It would be looking into improvement in our network, looking at how our business systems could improve and integration." – CEO, AU*
- *"Development of new tools for business details, new tools for business control. We have a development plan with new information tools that I need to develop." – CEO, BR*

### *Standardization/Integration*
- *"1. Standardization 2. Fast access and high availability on data lines 3. [To have] central know how in-house also for applications as for instance SAP." – CEO, DE*

- *"I think number one is uniformity of systems.  That's critical for a company that's been built up by acquisition. Our second priority is to not try and reinvent the wheel.  So we'll try and use what we've got on the shelf and adapt ourselves to what we buy." – CEO, AU*

## MITIGATE RISK
### Backup, Security and Disaster Recovery
- *"Backup, backup and fast.  You don't want to lose your data, you want to get it quickly and you want it to be accurate.  So those are the three things we freak out about - security, reliability and accuracy." – CEO, US*
- *"It would be to improve the disaster recovery side, which we're working on." – CEO, US*
- *"Security, veracity, data truthfulness and user comfort." – CEO, CZ*
- *"1. Data security 2. IT professionals 3. Geographic locations." – CEO, IN*

CIOs are well aware that their CEOs expect high levels of availability and speed to access information.  CIOs also recognize that security is a priority for their CEOs.  In order to support the CEOs' needs around business goals they are focused on business process improvement, increasing efficiency and providing management tools.  CIOs also add the responsibility of providing and maintaining up to date systems while controlling costs to what they believe the CEO expects from them.

**[CIO only] What are your CEO's top three priorities for IT in your company?**

## PERFORMANCE
### Speed and Ability to Access Information
- *"High availability--24/7 365 [days a year].  Then flexibility, and security." – CIO, US*
- *"The top three are probably going to be access to information, support of research and economic development, and improved quality of education." – CIO, US*
- *"I would say availability, cost and security. What we currently have does pretty much what we need " – CIO, FR*
- *"Three priorities: 1. to increase the data processing speed. 2. The Director would like to have wide range statistics on the data in order to see the business trends. 3. To create more user friendly environment for our final users- doctors…." – CIO, RU*
- *"Security, safety, performance. Centers support them enough, satisfactory. Positively influence." – CIO, CZ*
- *"Speed, Accuracy, Sorry, I can think only two." – CEO, KO*
- *"IT uptime - availability of the services from IT. Ability to meet customer needs faster. To keep the IT spending within the budget." – CIO, IN*
- *"Information accessibility, global security issues to be able to curb with different offices in the world" – CIO, SG*
- *"Availability of computational resources, Data centre growth depending on corporative growth, business continuity." – CIO, BR*

### Provide and Maintain Up to Date Systems
- *"My priorities... Insure, indeed, the functional cover of the company, this is something that we do step by step. Insure the security of data and infrastructure; to have a room protected enough for this use. And third, indeed that it costs as little as possible to the company." – CIO, FR*
- *"There is only one main task from the CEO: Everything has to function. The IT Department has to ensure (support) to smooth problems- and hassle- free operation of the whole business without delays. Data Centre has to function based on reasonable costs…." – CIO, RU*

- *"The main priority is not the percentage of data handling, it is that IT software and hardware was suitable for the business itself. This is the global task from the point of view of the Managing Director...." – CIO, RU*
- *"My priority here is to maintain our RP in working order, user support and equipment maintenance..." – CIO, BR*
- *"Updating the Hardware Park, information safety and training./Yes./Positive." – CIO, BR*

## SUPPORT BUSINESS GOALS

### Business Process Improvement
- *"Drive business process improvement, enhance efficiency in the business, and control IT costs." – CIO, US*
- *"IT to increase their productivity, create new business line and provide for a safe environment." – CIO, US*
- *"1. Support of the business processes 2. Costs 3. Flexibility" – CIO, DE*
- *"Improvement of rational processes in the company and increasing of availability of information. General support of all operations and processes in the company" – CIO, DE*
- *"Our priority is to offer all data, needed by the consumer, also to be able communicate effectively with a customer, regarding to logistics, accounting, material flow and supply change. Since this year they impact our total productivity positively." – CIO, CZ*
- *"1. Production related systems should be well managed. 2. Financial affairs or security systems should be further developed. 3. Fraud detecting systems should be strengthened." – CIO, KO*
- *"From my perspective is to support the business, leverage to get more value out of what we've got, to get more value our of SAP and last but not least is probably support growth and expansion…" – CIO, AU*
- *"First of all production control, then reports to Managers and then fast [access to] data..." – CIO, MX*

### Standardization
- *"Basically a global organization and having centralized optimum utilization across all 27 data centers." – CIO, IN*
- *"The first one is the implementation of the new IP solution, a standard solution across the company. The second one has to do with upgrading facilities in all areas and the third one is integration of new businesses into our systems." – CIO, AU*

## MITIGATE RISKS

### Reliability, Backup and Security
- *"Security is the biggest issue." – CIO, US*
- *"Security.  Saving our data and being able to restart working quickly.  Process management   As we are divided in 19 sites, our mechanisms should be pretty similar on all our sites to better our management…." –  CIO, FR*
- *"Reliability, efficiency, price." – CIO, CZ*

## ROI

### Cost and ROI
- *"Exploit the investments and SAPs, new technology to reduce cost in the business, and improved service." – CIO, US*
- *"Cost, Reliability, Security." – CIO, JP*
- *"Useful data for sales, investment cost for hardware, maintenance cost"  – CIO, JP*
- *"Cost reduction Maintenance fee reduction Business support." – CIO, KO*

CIOs want strong performance including high availability and stability.  They are aware that capacity is an issue and want better storage systems.  They want the hardware and software that is in use in their data centers to align with end-user needs so that they can support business goals.  data center security, redundancy and disaster planning are high priorities for them.  In addition, when thinking specifically about data centers, CIOs also want to be forward thinking and invest in products that will maximize their ROI- controlling cost while aligning with long-term business needs.

**[CIO only] What are your top three priorities in relation to your company's data centers?**

## PERFORMANCE
### Performance and Availability
- *"Uptime, backups and the environmental cooling - UPS." – CIO, US*
- *"In terms of what we expect from the data centers, resilience and availability, I would say, are the two things which are the most… from a user-of-Data-Centers perspective." – CIO, UK*
- *"To maintain the performance and stability of the system." – CIO, DE*

### Meeting Capacity Needs
- *"Keeping up with and managing the data because the volume is growing so fast, backing it up properly and securing it properly, so that's a big issue for us because it changes so dramatically from year to year and so in some cases the priority level changes, just the volume, trying to maintain security and backing everything up, again, spread out over an organization with different states, creates some demands" – CIO, US*
- *"[Better] storage capability, currently we have a mixture of blade servers and standard servers..." – CIO, US*

## SUPPORT BUSINESS GOALS
### Alignment of IT with Business Goals
- *"Definitely equipment refreshing, making sure we can easily scale as the company grows, having a platform that is scalable to accommodate the growth." – CIO, US*
- *"Quality of service, cost effectiveness of service, and those are the two key ones that I'm most concerned about with my data centers." – CIO, UK*
- *"1. To maintain software on a level that meets the user's requirements. 2. To plan the development of the existing centers. 3. To maintain on the required level not only software but also the hardware." – CIO, RU*
- *"Increasing the efficiency of IT to better support business. Cost. Speed to meet business requirements." – CIO, SG*
- *"Continuous operation to a lower cost, integrity in our database and to deliver truthful and timely information for a decision making." – CIO, MX*

## MITIGATE RISKS
### Security, Redundancy and Disaster Recovery
- *"I would say security would be a top priority because they would get painted badly if there were security problems…" – CIO, US*
- *"Securing the data center, providing for reliable back up and maximum up time." – CIO, US*
- *"Disaster recovery and some plan for continuity of operations. I leave it to my colleagues to evolve their own data centers but when it's a shared need like disaster recovery, then I would get involved. The challenge related to that is funding; it used to be unwillingness to engage in a collaborative activity, but I think that's going away." – CIO, US*

- "Safety, effectiveness, reliability." – CIO, CZ
- "First is the safety and salability, second is high performance, the last one is to maximize the use of its function." – CIO, CN
- "Security, risk management, business continuity." – CIO, JP
- "Measures for dealing with disasters. Security Cost." – CIO, IN
- "Obviously, the physical security of it and the redundancy capability of the data center, also having a network where we can have alternatives for other companies as they come in, having somewhere where we know they can put their systems and they can be managed in a secure environment." – CIO, AU

## ROI
### Controlling IT Costs
- "Today green issues would not be a top priority, though I think with time it will get higher and higher… As we buy equipment today, we take that into consideration but price is the driving factor." – CIO, US
- "[Indeed] that it costs as little as possible to the company." – CIO, FR
- "Ability to manage with the current infrastructure. Cost control." – CIO, IN

Many CIOs are satisfied with their current data center's ability to support their priorities and their centers have a positive impact on their overall ability to meet mission critical business goals.  A number of CIOs also indicated that they would not change anything about their data centers unless there was a problem or need that was critical to address.

**PROBE: How well do your current data centers support these priorities? Does the state of your data center positively or negatively impact your overall ability to meet mission critical business goals?**

- "[The CEO] told me one time that if he's not hearing anything about IT then we're doing a good job.  We work really closely with.  Our budgets are approved by him, our capital plans are approved by him, and our project schedules are approved by him, so he's aware of what we're doing." – CIO, US
- "[The data centers] are key to it; part of our core business is generic, but we are the differentiation on top of that that makes us different from our competitors." – CIO, US
- "[The data centers] positively impacts [our ability to meet business goals], versus many of my competitors, I have my own data centers and I'm able to take the customer to them, have them look at it, touch it and that's a positive." – CIO, US
- "Of course [data centers have a] positive impact. Nowadays no business can function without Data Centre. Now accounting, statistics are computerized…We had several complaints from the doctors that something is not convenient for usage." – CIO, RU
- "The state of our data center positively impacts the overall ability to meet mission critical business goal, the CEO is concerning about the improvement of the overall environment and equipment." – CIO, CN
- "[Our data centers] support these [business goals] well. I would say they positively impact because the fact that we are exceeding our KPI's is proof positive that what we've got is working for us." – CIO, AU
- "I would say it has been responding to all demands; there is nothing we didn't manage to respond to through the data center.  [The state of our data center has a] positive [impact on our ability to meet mission critical goals]." – CIO, BR
- "Well... in everything, I will say mainly to fulfill our clients, in accordance to necessities and our commitment to fulfill our clients we have to have everything updated.  [The state of our data center] Positively [impacts our ability to meet mission critical goals]." – CIO, MX

Both CEOs and CIOs recognize that a data center failure could have a devastating impact on their mission critical business goals.  The key areas where they feel the impact would be most significant are business continuity, compliance, reporting and other business processes that rely

on the data center.  This type of failure would also have a detrimental impact on their ability to serve customers.  Those indicating that a data center failure would have little to no impact on their business typically cited redundancy as the primary reason.

**What mission critical goals would be impacted the most at your company if any of your data centers failed?**

### All Aspects of Business/Business Continuity
- *"It would be a concern in all areas, total disaster. All processes in our company depend on IT infrastructure. If it would not be functional, all of our processes would have a big problem." – CIO, CZ*
- *"Our entire company would fail. It would obstruct our contact with clients and the industrial process." – CIO, CZ*
- *"Maintenance is probably the mission critical part of the business, operation would find it extremely difficult to function, inventory and maintenance, they are probably the mission critical systems because we are a mining company so we require the operators and the maintenance people to be able to get access to the inventory and also publish work orders and to carry out maintenance work, so if the system is down, there's loss of production, lost pounds, lost dollars." – CIO, AU*

### Compliance, Reporting, and Other IT Processes
- *"Collecting the information.  To be able to deliver the information to them as well.  It would be like it did not exist.  You can retrieve the outside storage if you go down." – CIO, US*
- *"The crucial ERP process could not be upheld and all crucial processes within the company would be endangered." – CIO, Germany*
- *"If the IT section relating to our accounting fails we have two problems, we have one with compliance with regulatory requirements and secondly, we would loose all capacity to effectively service their clients." – CEO, Australia*
- *"No more demands, no more mandates, no more payroll... So that is the first problem..." – CIO, FR*

### Ability to Serve Customers
- *"Uptime to our customers, the overall ability to function as a business.  All of our remote locations would have to cease operations." – CIO, US*
- *"Our response to customers, which is first and foremost. It's the bottom line." – CEO, Australia*
- *"Would they fail, we would stop. We couldn't do anything. We would be hit in all areas." – CIO, CZ*

### Unaffected Due to Redundancy
- *"We have back-up facilities that work.  And we're not depending on any one facility.  They are always tested.  If the system went down where you're calling me in Nova Scotia, we'd be up and running right away at another site." – CEO, US*
- *"No one, we have 4 data centers and 2 of them are 100% backups, there is no problem if 1 data center breaks down." – CIO, Germany*
- *"[But] as I mentioned earlier, because we're spread across continents, everything is set up in such a way that it is highly unlikely that we would get a total failure of all information systems globally, because of the redundancy that exists within the organization, and the ability to cope with that through hosting on different continents." – CIO, UK*
- *"[Which] means that if everything should breakdown, we should be able to.... let's say that in the most complicated scenarios, I think we should be back up in 4 hours. It is part of a locked and tested procedure. It is very clear and it concerns everyone..." – CIO, FR*
- *"Well the basic reason we have two is because one is redundant off of the other. So if we lost one then the other continues to kick in. If we were to lose both from a natural disaster or fire we have a disaster*

*recovery plan with a place off site provided through IBM. So we have a plan and an agreed process with business..." – CIO, Australia*

## Data Center Challenges and Concerns

More than 88% of respondents in each audience agree that "Over the last 40 years the data centers that power the world's economies have evolved into a complex patchwork of interconnected systems."  **In fact, more than a third - 33% of CEOs and 39% of CIOs consider their current data centers incapable of dealing with the rapidly growing demand for services and applications that their company will require in the next 2-5 years as a result of the "information explosion".**

| Do you agree or disagree with the following statement: "Over the last 40 years the data centers that power the world's economies have evolved into a complex patchwork of interconnected systems."  Do you... | CEO | CIO |
| --- | --- | --- |
| Strongly agree | 33% | 40% |
| Somewhat agree | 55% | 49% |
| Somewhat disagree | 9% | 1% |
| Strongly disagree | 1% | 7% |
| Don't know | 1% | 2% |

| Do you feel that your current technology is equipped to handle the rapidly growing demand for services and applications that your company will require in the next 2-5 years as a result of this "explosion"? | CEO |
| --- | --- |
| Yes | 67% |
| No | 33% |

| Do you feel that your current data centers are equipped to handle the rapidly growing demand for services and applications that your company will require in the next 2-5 years as a result of this "explosion"? | CIO |
| --- | --- |
| Yes | 61% |
| No | 39% |

Both CEOs and CIO indicate that there are two major strategies they are using to deal with the ensuing "information explosion". The first is the development and implementation of data management policies to help control the amount and type of data that is being stored.  The second strategy is continuing improvements to the technology (both hardware and software) used in the data center to expand capacity for and usability of data.

**Modern business practices have led to an "information explosion" that requires companies to store, process and report on increasingly large pools of data.  How is your company currently coping with this "information explosion"?**

***Policy Planning and Implementation***

- *"We are coping with this with some difficulty. We are trying to always reassess what is critical, what is really needed and what we should be getting rid of. Also being a public organization we have a lot of access to a lot of information for public safety and privacy. So we always wonder how long we should keep information and what we should memorize everything." – CIO, US*
- *"We're coping reasonably well. We just implemented a document management solution which helps how we manage and store our data. That means we have electronic documentation and good ways of finding it. So I think it's improved over the last couple of years since we've changed that." – CIO, UK*
- *"On a scale of one to five, it would be in the three range. It's midpoint. I think there's an awful lot more we could be doing. I would say that at the moment the way in which we're managing data is not as good as it could be. It's sufficient to serve the needs of the business, but it's perhaps not always as progressive as it might be..." – CEO, UK*
- *"We have to decide what data is really necessary to run the business - to make a connection of the mass in the meaning of costs and benefits, the real needs in the analytical sense." – CEO, DE*
- *"1.Arranging data flow and its systematization. 2. Information hierarchy, distributing into levels and topics. 3. Transferring data into hard disks." – CEO, FR*
- *"We aren't living this explosion, because we are very late on everything that has to do with archiving... We have a lot of paper files to store, material... So unfortunately the computerized flow of information is not yet at an acceptable level..." – CIO, FR*
- *"To record and save the information as much as we can to suit the requirement of the information explosion." – CEO, CN*
- *"Not very well. We are currently undertaking an information management strategy, looking across all the information inputs and outputs and business requirements and then working towards what is the best and most effective architectures and business processes to cater for that information explosion." – CEO, AU*

***Technology Planning***

- *"We've actually sat down with consultants a few times in the past to plan our storage needs and anticipate the growth in the future because of all the increase in data but the various systems that we are currently putting in with the increase in data that as a business we are putting in and because of required retention schedules set forth by the government, while we adequately address this in planning it hasn't been as effective as we've hoped, so we've constantly had to continue to add beyond what we planned for storage space, so we are looking into adequate solutions for that right now to meet our future needs." – CIO, US*
- *"[As] the technology evolves we evolve with it and we develop the methods to make that available to our costumers which are internal people and also to safely store it, back it up, access it and so forth. Two years from now I don't know what the technology is going to be, but we will be able to adjust to it." – CIO, US*
- *"We're coping with it by trying to develop and install enterprise-wide systems that support both the administrative functions within the company, and all the reporting needs of the company. So whether it is People Soft, or broad accounting systems, or whatever that might be." – CEO, US*
- *"[We've] currently got a myriad of twenty or thirty different systems and we are starting to find that the piece meal approach just hasn't worked for us and so that's why we are heading towards involvement for the whole company, so it's been a big issue for us.." – CIO, AU*
- *"Hardly. On servers of our customers we have requirements we have to observe. It is difficult to observe them all. It is difficult for capacities of people, for knowledge of people and for available hardware and software. But mainly it is about people." – CEO, CZ*
- *"Increase the professional staff; Increase the facilities and space of saving" – CEO, CN*
- *"We try to build a system in response to such issue, for example, SAP system." – CIO, KO*
- *"We are automating many of the routine processes." – CEO, IN*
- *"Management of generated MIS. Constant investments are made into conversion of stored data into tools for business growth." – CEO, SG*

- *"We are developing more and more complex systems, more potent, which can extract information out of data. We have more and more data to administrate, which is a chaos, and we have been investing time, technology and intelligence to extract business information out of available data. We need more powerful systems, we need intelligence, and we need analysis on top of the data." – CEO, BR*
- *"[Well], accessibility sometimes could be difficult or quite complex... but is good to have it there..." – CEO, MX*

Respondents see themselves facing performance related data center challenges in form of capacity and systems stability and availability. CEOs are very cognizant of the need for effective change management. The changing business environment including the evolution of international compliance and reporting requirements makes it critically important that the data center be flexible in order to support business continuity and growth. Both CEOs and CIOs see challenges in the area of mitigating risk via disaster recovery and redundancy and security. Finally, CEOs are concerned about having up to date equipment and adequate staffing and the accompanying cost of both. CIOs face the challenge of managing the financial investment necessary for the data center infrastructure and controlling the on-going costs inherent in maintaining the physical environment, ensuring energy availability and providing adequate technology and staff.

**[CEO only] What are your top three concerns or challenges related to the future of your company's data needs today? Why?**

**PERFORMANCE**
### Having Up to Date Equipment
- *"1. Permanent further development 2. We do invest permanently into our infrastructure 3. It is strategically very important to us to be always up-to-date. It is because of our clients, but also for the internal processes. We have always to be state-of-the-art to communicate on the same eye level with our clients." – CEO, DE*
- *"1. Hardware is in very poor state. It is inadequate, old and do not answer the current needs of the business. Regrettably, the possibilities which are available have not been realized in full. 2. The problem about the software which is applicable to our type of business. 3. IT Personnel need training." – CEO, RU*
- *"1) Requirements for new software development technique for exponentially increasing data. 2) Rapid Introduction and implementation of the new system 3) Expansion of HR and labor cost evolving development of new program for new system." – CEO, KO*

**SUPPORT BUSINESS GOALS**
### Change Management
- *"The biggest thing is the change management process is trying to get an education. This is because with the new systems, the biggest risk of putting in a new system is the training and development side. With people using the new system it is the change of process. " – CEO, US*

### Optimizing Resources
- *"First is functionality. To continue to meet our business and mission needs. The second would be to contain the cost to a level that the organization can continue to support. And the third is to stay current with technology so we don't get left behind and make a sufficient investment, so that our It systems don't become obsolete." – CEO, US*
- *"At the moment each local business unit has each data centre. I consider that they should be unified in the future. The reason for this is that it is better to joint information." – CEO, JP*

- *"1) Integration of all systems as all locations have a different systems 2) Timely reporting as due to different systems it delays in the timely reporting 3) Good business intelligence applications as data is available but not used to the optimum capacity." – CEO, SG*

### Staffing
- *"I mentioned hiring new people, but really it's about paying them.  It's the competition in the industry that gets you." – CEO, US*
- *"1. It professional - high attrition 2. Data security - some of the data poaching 3. Ability to expand a business - looking at multidimensional growth." – CEO, IN*

## MITIGATE RISK
### Disaster Recovery/Redundancy
- *"Disaster recovery, we've got a lot of work to do there. The industry standards are stringent and I am compliant only on certain levels, some of my things that are databases are so old that they can't be encrypted to the level that I need them to be.."  – CEO, US*

### Security
- *"I know we have concerns with computer security. So I know that we doubled our system last year to create a better computer security in order to be able to backup all our applications in case of an accident. Computer security is a real and important concern." – CIO, FR*
- *"1 Security of the business information 2 The risk of business information leaking, due to the record of the business process." – CIO, CN*

## ROI
### Investment/Cost
- *"Cost, cost-competitiveness, that's always one.  I kind of said them before- the ability to effectively develop new software to remain competitive in the industry.  Staying on top of technology, and being able to use the newest technology effectively." – CEO, US*
- *"Cost of investments are a concern…Cost of investments is whether the business can afford the extent of investment it feels is necessary and software supports means it is critical that if you invest in some particular technology that relies upon some license for its use.  That you can't be responsible for that will continue to grow and prosper or will go on to lose or go off in other areas and not want to support that particular software." – CEO, AU*

**[CIO only] What are your top three concerns or challenges related to the future of your company's data centers today? Why?**

## PERFORMANCE
### Capacity
- *"Growing storage, connectivity between various sites while maintaining security and security." – CIO, US*
- *"Data storage problems are becoming increasingly urgent. Actually I have them now, my disks are all full..." – CIO, FR*
- *"One of them is the bandwidth between communications, because the cost is quite high." – CIO, MX*

### System Stability and Availability
- *"[Maintaining] our current level of uptime, that's always a concern …." – CIO, US*
- *"I would say our top concerns are consistently performing in an always-on environment…and gaining control over the aspects that influence our service level agreements from the standpoint of gaining*

*control of UPS systems and our generators and other aspects that influence our IT performance that's outside of my control.”  –  CIO, US*
- *“System stability, performance and support of microeconomic changes in the company” – CIO, Germany*
- *“1. Stability of the systems 2. To provide the service demanded by the user  3. For a reasonable price” – CIO, Germany.” – CIO, DE*
- *“One of them is the bandwidth between communication, because the cost is quite high...” – CIO, MX*

## SUPPORT BUSINESS GOALS
### Changing Business Environment
- *“Keeping up with constant change, compliance issues and business continuity.  Government compliance is constantly changing and business intelligence because that is very useful to us and business continuity because it is so important to our business that we have to make sure it is always available.” – CIO, US*
- *“Business continuity is of huge concern.  Everything changes and different disasters and securities change and you have to be prepared for it.  Obviously storage - people don't want to get rid of anything and then dealing with the legal and government compliance of keeping data for too long. And then growth is just adding storage.” – CIO, US*
- *“The biggest challenge for the data center is to guaranty flexibility in terms of the corporation growth. That's it, to guarantee the quality pattern and resources availability.” – CIO, BR*
- *“The main challenge is the union between system area and automated production, because if you want to obtain the info you will have to be connected to the system...” – CIO, MX*

## MITIGATE RISK
### Disaster Recovery/Redundancy
- *“Disaster recovery process procedures.  How I move more work away from my team into the data center.  I have an IT team that's based inside the organization.  And I would like to move more of their work into the data center, i.e. source more of it.  So that's a challenge…” – CIO, UK*
- *“To secure them in effect of safety. Some solution of crash situations. A disaster recovery plan...” – CIO, CZ*

### Security
- *“Security is always a concern based on the evolving internet, reliability based on age of hardware, it's not a concern at this point but it will be an upcoming concern, reliability and redundancy.” – CIO, US*
- *“Security... Being able to face machine errors, failures, fires, constraints like that...” – CIO, FR*
- *“Security because of the threat of data being stolen…” – CIO, FR*
- *“Security, stability and openness. They are the problem faces by all IT users.” –  CIO, CN*
- *“Tightened security and fraud detecting program are needed in order to prevent people's misbehavior.” – CIO, Korea*
- *“Security because of the threat of data being stolen cost of running the datacenter increasing.” – CIO, SG*

## ROI
### Investment/Cost
- *“We're a public sector, so number one is always funding.  Number two is the rapid change of technology.  Number three is compliance with new federal and state regulations.” – CIO, US*
- *“The investment required to expand, whether we should be doing that or not internally.” – CIO, US*
- *“Budget is number one, not putting enough money in the budget.  Then space constraints and staffing.  It really all comes down to budget.” – CIO, US*
- *“[Looking] for strategies to contain and reduce costs, specifically utility costs, and electrical costs.” – CIO, US*

- *"Upgrades and performance. Restricted budget." – CIO, UK*

**Physical Environment**
- *"Growth of the physical space, and the cost of the environmentals--electricity, air conditioning, uninterruptable power supplies, generators, things like that." – CIO, US*
- *"The cooling units are the only things I worry about." – CIO, US*
- *"The challenges are space management…Companies grow and there's a certain point where you can't put anymore equipment in a data center effectively, so that's one of our challenges..." – CIO, US*
- *"Security of the centers, the climate, preserving the right temperature, air conditioning constraints, and perhaps the size of it, floor space." – CIO, US*
- *"It is the environment around the databases themselves, power consumption, thermal regulations of the rooms, and also, being able to call maintenance teams early enough to avoid any important material and data failures..." – CIO, FR*
- *"1. Lack of space. The quantity of hardware is increasing constantly. We need extra space for it." – CIO, RU*
- *"The only challenge that we've got that we will eventually out grow the data centers we've got but that's not a huge issues because we own the real estate where we are. So it would just be a matter of expanding. Yes the air conditioning is something to address but we don't have power issues here in Queens land and we don't have natural disasters that might be a concern." – CIO, AU*

**Energy**
- *"Power and cooling." – CIO, US*
- *"Concern number one is adequate power and that's limited because of our server room and even though it's a fairly new data center we are rapidly approaching the point where we have room for expansion but we don't have enough power available…." – CIO, US*
- *"[If] we put much more in there we would have change the power supplies. We are being very close to power limitations on the current data center." – CIO, UK*
- *"Company will have no floor space constraints, but will have to deal with the topic of energy efficiency." – CIO, DE*

**Technology and Personnel**
- *"Changing technology. The need to take the equipment out and forklift the new ones in, so the constant evolution and upgrading of the equipment. External threats from hackers or malicious code and viruses." – CIO, US*
- *"People resources, cost, and disaster recovery. Because we're starting an outsourcing effort, I'm going to start losing people. So having people to run what we still have is going to be a challenge." – CIO, US*
- *"Making sure that we have the capacity, that we have the skill sets in order to support the infrastructure and making sure that we can leverage IT for our business here, so we are always trying to find the value add for IT service." – CIO, US*
- *"[We] aren't enough (IT), we cannot know everything. It comes back to this; as I said they need more storage space, we don't know the software well enough, so we do not optimize their use...." – CIO, FR*
- *"Shortage of staff within our organization. We need a special person from data centre to deal with this problem." – CIO, JP*
- *"To set up the right process & have the appropriate people to manage the datacenter efficiently as it is difficult to have good staff due to low qualification and high attrition..." – CIO, IN*

While the majority of respondents spend less the 20% of their organizations total IT budget on maintaining data centers, one third expect this level to increase over the next five years.

| What percentage of your organization's total IT expenditure is invested maintaining the operations of your data center solutions today? | CIO |
|---|---|
| 0 to 5 % | 23% |
| 6 to 10% | 11% |
| 11 to 20% | 19% |
| 21 to 30% | 17% |
| 31 to 40% | 11% |
| 41 to 50% | 8% |
| 50% + | 7% |
| NA | 4% |

| Do you expect this to increase, decrease or remain at the current level over the next five years? | CIO |
|---|---|
| Increase | 36% |
| Decrease | 20% |
| Remain the same | 43% |

Key drivers that would be most likely to motivate data center transformation are reducing operational costs and TCO for the data center and improving performance and reliability to support business continuity.

| What is the number one driver that would cause your company to consider doing data center transformation? | CIO |
|---|---|
| Space utilization | 7% |
| Lower TCO | 16% |
| Increased availability | 8% |
| Improved performance | 10% |
| Power consumption | 1% |
| Sustainability ie. Green IT | 1% |
| IT as a competitive advantage | 6% |
| Reduced operational costs | 19% |
| Scalability | 6% |
| Reliability | 12% |
| Increased productivity | 2% |
| Business continuity | 11% |

# Data Center Transformation Decisions

**Among those interviewed, nearly half of CIOs – 47% - plan to "Reduce the number of data centers through transformation** – improving technology, increasing productivity and lowering overhead and management costs."

| Over the next 5 years is your company planning to… | CIO |
|---|---|
| Increase the number of types of data center to match expansion of other business units in the company | 37% |
| Reduce the number of data centers through transformation – improving technology, increasing productivity and lowering overhead and management costs | 47% |
| Keep our data center as is… (volunteered) | 13% |
| No Answer/Refused Answer | 2% |

However the majority of CIOs do not think the process is very urgent, in fact 49% said it was not very to not at all urgent.

| How urgent do you believe it is for your company to undergo data center transformation? For example, reducing the number of data centers by improving or purchasing new technology, increasing productivity and lowering overhead and management costs? | CIO |
|---|---|
| Very urgent | 14% |
| Somewhat urgent | 37% |
| Not very urgent | 39% |
| Not at all urgent | 10% |

Some of those interviewed who had a limited sense of urgency had just recently updated their data centers.  Some felt that in their industry the data center was not a critical element in meeting business goals, while others felt that their existing center adequately met their needs.

***Current Data Center Adequately Meets Business Needs***
- *"Nothing particular. I am satisfied with performance. If service is bad, we just change it." –  CIO, JP*
- *"Our Data centre at its current structure servers the needs of the business now. The quality is not ideal but we are satisfied otherwise we would have done something about it. We are a big company in this Russian region." – CIO, RU*
- *"To be honest the IT department is not crucial in this company, this is a Steel producer and we work more with the company's financial initiative." –  CIO, BR*

Among those who expressed interest in changing their data center solutions, there was a heavy emphasis on improving performance.  CIOs want to improve speed, availability and reliability.  They also want solutions to be flexible and scalable.  Some feel that they need to invest in new hardware and software to accomplish these goals.  Respondents are also interested in improving their ability to meet the increasing demands for security and redundancy to mitigate data center risk.  Cost is a data center concern for CIOs.  They want to maximize ROI and while

having 'green' solutions is not necessarily a priority in itself they are concerned about consolidating and reducing power consumption and the ensuing costs.

**[CIO only] What would you like to see change about your current data center solutions?**

**PERFORMANCE**
### Improved Business Performance and Reliability
- *"Yes, we are occasionally experiencing downtime for various reasons. One of them is a server crashing, as you said. One of them would be a telecom communication leak going down. Those are all seen as downtime issues." – CIO, US*
- *"Generally time to resolve issues, and also delivering peoples' processes. When you look at these data centers, they have very good processes. Documented processes. But the actual physical delivery isn't always as good as the documented processes." – CIO, UK*
- *"I would like to have more opportunities for pro-active animation. That means systems should report themselves before the have real problems but we are on the way of getting them." – CIO, DE*
- *"The performance, speed, and storage." – CIO, JP*
- *"The level of efficiency is very low; I hope it can collect data automatically." – CIO, CN*
- *"there still space for improvement in the speed of accessing information and the date process ability; if the data centre crashes or have poor quality of service, then it will have an significant impact on the business, but we haven't experience any of that, apart from affected from the delays. the cost of the data centre are related to the development of the business, but there're still some increase in the total number of the database" – CIO, CN*
- *"We think we are running high quality IT services at a very cost effective price. All the data centers are in house but they are cost effective and meet our requirement and meeting the business requirements. We are meeting if not exceeding all of our KPI's. It's a good look." – CIO, AU*
- *"More than anything is a wider bandwidth in all lines of communications and the continuous updating of software..." – CIO, MX*

### Increased Flexibility and Scalability through Consolidation
- *"Scalability is the issue. We're about to outgrow our data center here in five years, so we have to have another one." – CIO, US*
- *"Consolidation, consolidating our foot print, getting rid of the older systems that are bigger, moving into more of the virtual server, blade technology, we're taking a closer look at power usage and cooling, those are some big items." – CIO, US*
- *"I would like more flexibility on space and reduce thermal footprint, it cost a lot to cool it and space to cool it. It would be nice to have more flexibility for the room it was designed to fit into. We are just coping with the space." – CIO, UK*
- *"[We] try and consolidate when there is better technology. We're trying to introduce the Blade servers and use that technology instead of adding multiple servers. We have some disc space that is not used 100% and in other cases, we're running out of it. We really could more integrate into a single type of data software with new hardware and software migrations." – CIO, US*
- *"We have got the situation now when 4 servers are working round the clock. We need more space because the current one has become too small." – CIO, RU*

### New Hardware or Software to Increase Speed, Capacity, and Improve Backups
- *"[Regarding] the servers I have no complaints, we also use KBM, but for physical improvements we could use increased capacity." – CIO, US*
- *"We migrate hardware about every three years and software let's say on a four year cycle." – CIO, CA*
- *"Software migration we will do, in terms of the upgrading system and the active directory environment. We actually need to upgrade things like corporate email to get a more up to date*

*release from Microsoft, we are using an exchange and we've got a very old version and the Windows server, we need to upgrade as well." – CIO, UK*

- *"Also I would like see the process of copying data run more smoothly as well as the back up process. The question for us is not about separate data storage space, it is about back up copying." – CIO, RU*
- *"The amount is fine, but more efficient technology would be favorable." – CIO, CZ*

## MITIGATE RISK

### *Meeting the Increased Demand for Security and Redundancy*

- *"What is important for us is improving our security, to make our system hack-proof. Cost and performances are also of importance in choosing our solution; it is part of a whole in our choice of a solution. The cost has a direct impact on the level of security we expect: the more expensive, the more secure, the more processes will satisfy us…" – CIO, FR*
- *"We are thinking of starting to use solutions of high availability, we are going to replicate our machines outside our walls in order to have a clone of the machine available in case of fire, disaster, flooding, stealing, everything you name, everything that could destroy our principal machines." – CIO, FR*
- *"[The] computing itself is generally going down but the cost of these kinds of applications and appliances, the security arena are continuing to go up. They keep adding features and functionality but that's just part of the environment." – CIO, US*
- *"I think we need to have more redundancy in our systems. Today, with only having a single data center, we're vulnerable to outages at this state." – CIO, US*
- *"[Waterproof] facility should be installed." – CIO, KO*
- *"Total cost; we actually pay a fee for the use of the data center, we don't pay for the upcheck of that data center, I mean, we provide all the hardware as in servers and communications equipment but in terms the redundancy, we just pay a fee in relation to that." – CIO, AU*

## ROI

### *Reducing Energy Consumption and Costs to Go Green*

- *"I would like it to be more consolidated and actually less expensive power-wise, and those sorts of measures. I would like it to be cheaper." – CIO, US*
- *"We're trying to be green; yes, that is a concern for us." – CIO, US*
- *"Things that would fall under that category for me is less power consumption, lower heat, smaller footprint of the servers we have in our data centers, mission critical disaster recovery efforts, so that there is higher availability or more real time availability and virtualization.." – CIO, US*
- *"It is a concern if we can do it cheaper we would but not a specific concern. The biggest concern is space and flexibility." – CIO, UK*
- *"I am dissatisfied that we air-conditioning the whole facility." – CIO, DE*
- *"[There] is one thing that is improving, it's the power consumption and the heat emissions, so on the newest models it is getting better." – CIO, FR*

### *Cost as a Data Center Concern*

- *"I am satisfied with performance. If I have to say something, I will say reducing cost." – CIO, JP*

Of those CIOs who do plan to undertake the transformation process, the largest percentage expect the process to start in the next 6 months.

| When do you expect the data center transformation process to begin? | CIO |
| --- | --- |
| 0 – 6 months | 28% |
| 6 – 12 months | 16% |
| 12 – 18 months | 11% |
| 18 – 24 months | 5% |
| 24+ months | 16% |
| Not currently planning a data center transformation | 25% |

**58% of CEOs and 52% of CIOs strongly agree that "data center transformation is a CEO decision executed by a team.** If our team (CEO, CFO, etc.) doesn't support the process it will fail."

| How strongly do you agree or disagree with the following statement: "data center transformation is a CEO decision executed by a team. If our team (CEO, CFO, etc) doesn't support the process it will fail."  Do you… | CEO | CIO |
| --- | --- | --- |
| Strongly agree | 58% | 52% |
| Somewhat agree | 29% | 31% |
| Somewhat disagree | 10% | 7% |
| Strongly disagree | 3% | 6% |
| Don't know | 0% | 4% |

Most CEOs are involved in the early stages of planning data center transformation either by providing direction at the inception of the plan or by providing oversight once the goals have been set.  Relatively few CEOs remain directly involved in the process of implementation.  41% of CIOs would actually like to see more involvement on the part of the CEOs.

| What parts of the data center transformation process is your CEO involved in? | CIO |
| --- | --- |
| At the inception of strategic planning the CEO provides direction | 41% |
| Once strategic goals have been set the CEO provides oversight | 21% |
| After the plan is implemented the CEO remains directly involved in the process | 12% |
| The CEO is not involved | 14% |
| Other | 12% |

| Would you like to see the CEO be more or less involved? | CIO |
| --- | --- |
| More | 41% |
| Less | 36% |
| At the current level (volunteered) | 1% |
| Don't know | 22% |

CIOs generally feel that the CEO should be a strong leader serving as the initiator and driver for transformation. Others feel that the CEOs primary responsibility is as a decision maker reviewing and understanding the business case including costs, risk exposure, and business goals served before supporting the CIO financially and professionally with implementation.

**[CIO only] What should the CEO's role be in the data center transformation process?**

- *"He is the stake holder of this project & all the approval authority depends on him." – CIO, SG*
- *"Business adherence, critical analysis of cost relations. Cost analysis and analysis of business continuity. The two options." – CIO, BR*

CIOs view LOB as their key clients however, their responses are mixed as to what this means for data center transformation. Some feel that LOB should not be active in the process that, in fact, the process should be so seamless that there is no interruption in the end-users experience and they remain unaware of any change. Others feel LOB should be actively involved as participants and supporters of the process through needs identification, planning, testing, and monitoring progress.

**[CIO only] What role should Line of Business play in the data center transformation process?**

***Participant & Supporter***
- *"They would be more involved. It's really being done for them. They should be involved in the planning, the execution. They should be involved in the cost reduction efforts. They should be involved in the staging of the consolidation as to what applications, and the process of consolidation itself. It may affect their schedule; it may impact their users, so they should be very involved in the process of actually consolidating." – CIO, US*
- *"It should be an integral process; they should be integrated in the process. That's who we're trying to serve and support, so they need to know what the expectations of that is." – CIO, US*
- *"Setting parameters for service-level agreements. If they need certain things at certain points in time, how do you support what they want to do? There has to be alignment on that part." – CIO, US*
- *"The role of clearly mapping out their individual goals, and if we don't know what their goals are, we have a hard time scoping out long term needs." – CIO, US*
- *"They need to be closely involved. I don't know whether you'd call it supportive… they're not the initiators of it, but they're the ones that are going to suffer if it goes wrong. They're the stakeholders." – CIO, UK*
- *"From a business perspective, they are our clients. Therefore they need to be consulted to be sure that the solutions that we are designing meet their future requirements. If their requirements are rapidly changing, my solutions need to meet those requirements." – CIO, UK*
- *"The quality assurance. When the service starts again in the pilot phase, the functionality needs to be tested before the real service starts again." – CIO, DE*
- *"All the other departments have to do their part in this transformation. Any change is connected with some sort of stress and hassle for its users. The users have to be ready to these changes. IT task is to ensure the smooth and quick running of the data centre transformation process and reduce the stress level to all of the users to minimum." – CIO, RU*
- *"Partly they should be part of the process. During the transformation we plan some activities in a way, to allow us to optimize new architecture according to the requirements of these branches. They have to be informed and they can have some feedback." – CIO, CZ*
- *"They should cooperate with system section's request." – CIO, JP*
- *"An important role. For example, it provides useful information when it is needed." – CIO, KO*

- *"Will play a major role as the business plan will decide what technology has to be procured & then delivered to the end users." – CIO, IN*
- *"Well, it impacts them so therefore they should have a fairly major involvement in terms of monitoring progress and impact and risk." – CIO, AU*
- *"It should be support and they should be involved in testing and some ways engaged, through testing, outages and when new systems are in place." – CIO, AU*
- *"To make known his requirement to the system specialized area." – CIO, MX*

### Limited Role
- *"From where I sit data center transformation doesn't really have anything to do with line of business. Data center transformation has to do with the best utilization of technology and availability, whether you're dealing with healthcare or Wall Street…" – CIO, US*
- *"I would say they need to be on the sideline but involved at various critical points in the process.  They must be kept informed." – CIO, US*
- *"None. They should not notice anything. IT is like the power coming from the socket. They shouldn't mind when the service comes from Germany, India or elsewhere." – CIO, DE*
- *"It doesn't have a role to play, because the process of transformation of our data centers is purely technical and is not linked with our line of business." – CIO, FR*
- *"There is no role for line of business at all. Only systems section does that." – CIO, JP*
- *"There is no link with line of business & the data transformation process however there should be no down time." – CIO, SG*
- *"None, I believe. They cannot feel any impact if there is any kind of change in the data center. It has to be transparent for any business sector." – CIO, BR*

63% of CEOs agreed with the idea that "Any change [to a data center] requires scores of specialized IT people to manage the process…" CIOs were more divided 52% agreed while 48% did not.  Some objected to the use of the word 'scores' when speaking to the interviewers indicating that it was perhaps misleading – a numeric overstatement.

| How much do you agree or disagree with the following statement: "Any change [to a data center] requires scores of specialized IT people to manage the process---impeding information access, lowering profit margins and introducing business and financial risks." | CEO | CIO |
|---|---|---|
| Strongly agree | 22% | 24% |
| Somewhat agree | 41% | 28% |
| Somewhat disagree | 22% | 27% |
| Strongly disagree | 13% | 22% |
| Don't know | 3% | 0% |

**CIOs are split on whether they feel the transformation can be managed in-house or if it needs to be outsourced.  51% of CIOs say they have the skills in house already while 49% would need to seek outside assistance either from training or contracts.**

| Do you have the in-house knowledge and expertise needed to complete the data center transformation process? | CIO |
|---|---|
| Yes | 51% |
| No | 49% |

Of those who would seek outside help, 65% would prefer to contract with a vendor.

| How do you plan to acquire the knowledge and expertise needed to complete the data center transformation process? | CIO |
|---|---|
| Send current staff to training programs | 9% |
| Hire additional permanent staff | 2% |
| Hire temporary or contract staff | 7% |
| Contract with an outside vendor | 65% |
| Don't know | 12% |
| No answer/Refused answer | 5% |

Ideally for CIOs, transformation would be a carefully planned process that includes support from key stakeholders and a selection of best in class resources both internally and externally. Many respondents plan to do needs assessment and develop a plan before seeking funding from management. Some respondents plan to implement a transformation by purchasing new hardware or software and using internal/current staff to install and upgrade resources. Other respondents plan to contract with outside vendors who will execute the transformation process from start to finish based on the needs and standards they provide.

 **[CIO only] What steps do you plan to take to execute data center transformation process?**
**PROBE:** How do you expect the data center transformation process to begin?
**PROBE:** Is this starting point ideal or are there other ways you would prefer to see the process begin?

***Needs Assessment, Development, and Budget***
- *"I think the first thing we need to do is develop a plan. If you're talking about execution, I think you need a plan before you can execute. I'd have to be looking at the environmental; I'd have to be looking a how does the business center support the needs of the business, and from an availability standpoint, what type of access are we going to need across the board?" – CIO, US*
- *"It would require an extensive business plan, a need assessment, and I'm certain, external resources to assist us." – CIO, US*
- *"We start the process by having the budget for expansion approved. So it's financial justification and assurance that there's capitol to make the transformation. Then we have to staff the transformation. Then we have to have a game plan or a road map to the transformation to perform the transformation." – CIO, US*
- *"I think its project related." – CIO, US*
- *"Only small steps will be taken to adapt to possible changes, according to possible demands." – CIO, DE*
- *"Evaluation if an application is to run central or decentralized. Next is the development of a technical concept, that than has to be implemented." – CIO, DE*
- *"It will be site by site, looking at their needs, and modifying according to that. It will be a call to tender or a contract with an external company, a public call to tender. We will ask for offers from different companies and choose from this which is the most interesting." – CIO, FR*
- *"1. To research what is in offer on the market regarding data center transformation, 2. To design the Centre. 3. To put it into action." – CIO, RU*
- *"First of all create in-house infrastructure, and then outsourcing." – CIO, JP*

- *"Before the transformation, confidence should be strengthened. The data centre should be further developed so that the centre can provide strong support to other main business."* – CIO, KO
- *"Internal team will have to study the requirement and gain the design trends that will efficiently meet the needs."* – CIO, IN
- *"Would look something at a new cost - upgrading new technology."* – CIO, SG
- *"The way it's begun is through finding somewhere to be able to house our new systems..."* – CIO, AU
- *"The way it's begun is through finding somewhere to be able to house our new systems, the systems where we are currently rolling out and that's already started, the next step will be in relation to where we've got businesses in similar geographical locations or other parts of the world or even in Australia we'll look at whether we can accommodate them in our facilities or whether we need alternatives for that.."* – CIO, BR

### Internal Implementation and Execution
- *"We've invested in virtualization for both our servers and our storage systems. We're building a new facility that's a brand new data center that will let us enhance our connectivity to other various operations. I think those are the key things that we're doing to transform our data center."* – CIO, US
- *"We have replaced the entire infrastructure; we have replaced our power source, replaced our air conditioning, and are implementing virtualization."* – CIO, US
- *"It will be site by site, looking at their needs, and modifying according to that. It will be a call to tender or a contract with an external company, a public call to tender. We are asking for offers to different companies and choose from this which is the most interesting."* – CIO, FR
- *"Re-organize the machines room, the room where the data centers are kept. Secondly: Storage virtualization. Thirdly: Servers virtualization. This is pretty much how we wish to do it."* – CIO, FR
- *"That would be buying new hardware, use of blades, acquisition of new servers, and the centralization of servers."* – CIO, UK
- *"With the consolidation of the European data centers."* – CIO, DE
- *"1. Space increase. 2. Optimizing network systems. 3. Optimizing data storage."* – CIO, RU
- *"Changing some members of the staff and also automated process would be used more frequently."* – CIO, KO
- *"We've already done the planning; we are in the phase of authorization for budget expenditure, the part of project building, choosing suppliers and execution. It's ideal."* – CIO, BR
- *"This is updating at the same time hardware and software, also long term licensing plans..."* – CIO, MX

### Outsourcing
- *"We had a contractor in who did the assessment. We had IBM take a look at what we need to do for our growth, and then we just went out for a bid for that growth and upgrade to our data center. And we're waiting for the winner of the bid."* – CIO, US
- *"We're outsourcing it and dictating what our standards are."* – CIO, US
- *"We put in a request for proposal in RFP, define our requirements and have vendors bid on it. We'll award the bid and at that point it'll begin."* – CIO, US
- *"Engage in third party consultants."* – CIO, US
- *"[We] firstly define the needs then we try to make a quote for the project with the collaboration of the companies that we contact. It is some kind of partnership, if you can call it like that. I mean that companies suggest some solutions to us and then we try to see what it is all about..."* – CIO, FR
- *"First of all create in-house infrastructure, and then outsourcing."* – CIO, JP

# Barriers to Transformation

According to respondents, the three most critical barriers to overcome in the transformation process are: 'Lack of sufficient capital budget to initiate project/make initial investments' followed by 'concerns about move and migration risks' and 'Potential disruption to the business.'

| What is the biggest barrier to data center transformation at your company? | CIO |
|---|---|
| Concerns about move and migration risks | 10% |
| Lack of sufficient capital budget to initiate project/make initial investments | 23% |
| Fear of security risks created by transferring and consolidating data to a smaller number of locations | 6% |
| Existing data centers are managed by many different teams/divisions/parts of the business around the company | 4% |
| Potential disruption to the business | 7% |
| Lack of in-house knowledge/expertise | 2% |
| Unable to articulate and demonstrate the business benefits | 4% |
| Other | 45% |

Most CIOs anticipate that the biggest benefit of data center transformation will be that they are 'More able to meet future demands for increased data center capacity' flowed closely by 'Lower operational costs from improved control and easier management of the physical and virtual assets within the data center.'

| What is the biggest benefit of data center transformation for your company? | CIO |
|---|---|
| More able to meet future demands for increased data center capacity | 18% |
| Increased availability 24x7 of the IT infrastructure housed within the data center | 10% |
| Lower operational costs from improved control and easier management of the physical and virtual assets within the data center | 17% |
| Migration of environmental effect by being more energy-efficient with lower demand for power and cooling resources | 1% |
| Provides opportunity to relocate to more advantageous locations for a data center e.g. based on power supply and telecommunications infrastructure | 0% |
| Reducing the costs incurred by reduced real-estate (e.g. floor space) | 2% |
| Other | 52% |

More than 30% of CEOs would hope to see ROI in data center transformation within 2 years and CIOs are aligned with that timeline.

| How quickly do you expect to see ROI from investments made in transforming the data center by making major improvements in your data centers? | CEO |
|---|---|
| 0 – 6 months | 8% |
| 6 – 12 months | 24% |
| 1 – 2 years | 35% |
| 2 – 3 years | 0% |
| 3 – 5 years | 28% |
| 5 – 7 years | 3% |
| 7 – 10 years | 1% |
| No answer/Refused answer | 1% |

| How long do you think it will take to realize ROI from investments made in transforming the data center? | CIO |
|---|---|
| 0 – 6 months | 13% |
| 6 – 12 months | 12% |
| 1 – 2 years | 33% |
| 2 – 3 years | 2% |
| 3 – 5 years | 33% |
| 5 – 7 years | 5% |
| 7 – 10 years | 2% |
| No answer/Refused answer | 0% |

Respondents typically think of their data centers as a physical space that contains technology solutions, only 9% of CEOs and 7% of CIOs would define it as a virtual entity. A few respondents indicated that the controlled environment was one of the identifiers of a data center.

| What qualifies as a data center in your company – how would you define it? | CEO | CIO |
|---|---|---|
| A single physical space in a standalone building where the computer hardware and software is maintained | 33% | 19% |
| A virtual entity that encompasses all of the computer facilities | 9% | 7% |
| A physical room containing their computer software and hardware | 32% | 48% |
| Other | 26% | 25% |
| Don't know | 0% | 0% |

***Specialized Environment***
- *"A dedicated facility with specialized air and power, the air has to be forced supply air designed for data centers and the power is going to have a UPS with a generator from it and the power will have a higher amount per square footage available than is typically available..." – CIO, US*
- *"I would define a data center as a specialized environment for housing computer equipment. So it's an environment with particular emphasis on environmental requirements such as around power back up, cooling, surge control etc..." – CIO, AU*

More than half of those interviewed say their company currently has two or more data centers. Decisions about where data centers are located are commonly based on the needs of local business units.

| How many data centers does your company currently have? | CEO | CIO |
|---|---|---|
| 1 | 41% | 40% |
| 2 – 5 | 38% | 42% |
| 5 – 10 | 8% | 6% |
| 10 – 25 | 8% | 6% |
| 25 – 100 | 1% | 5% |
| 100+ | 3% | 1% |
| No answer/Refused answer | 1% | 0% |

| How is distribution of your IT facilities or teams such as data centers determined? | CEO | CIO |
|---|---|---|
| Cost of staffing | 8% | 9% |
| Facilities costs | 6% | 7% |
| Real estate prices | 2% | 5% |
| Number of local business units | 11% | 10% |
| Needs of local or regional business units | 41% | 33% |
| Location was determined by a previous owner prior to acquisition by my company | 11% | 18% |
| Other | 20% | 15% |

CIOs have a net satisfaction of 96% with their current data center solutions.

| How satisfied are you with your company's current data center solutions? *Net Satisfaction= (Very + Somewhat Satisfied)- (Not Very + Not at All Satisfied)* | CIO |
|---|---|
| Very satisfied | 40% |
| Somewhat satisfied | 58% |
| Not very satisfied | 1% |
| Not at all satisfied | 1% |

Net satisfaction among CEOs is lower at 75% with more respondents falling more in the not very to somewhat satisfied range.

| How satisfied are you with your IT Department's ability to provide data centers and tools to meet business goals, for example rapid access to mission critical data or time to close books. *Net Satisfaction= (Very + Somewhat Satisfied)- (Not Very + Not at All Satisfied)* | CEO |
|---|---|
| Very satisfied | 44% |
| Somewhat satisfied | 44% |
| Not very satisfied | 13% |
| Not at all satisfied | 0% |

Respondents have a general perception that their current data center will be able to meet their needs going forward, however they do still see some potential benefits of transformation.

| Thinking about the data centers necessary to address mission critical business goals, do you feel your company's current IT infrastructure and staffing adequately addresses your company's needs? | CEO |
|---|---|
| Yes | 76% |
| No | 24% |

# Benefits of Transformation

CEOs expect changes to the Data center to lower costs and accelerate growth and CIOs are aware of their expectations in relation to cost but slightly underestimate the expectations around growth while placing slightly more emphasis on IT as a competitive advantage as a secondary expectation.

| What business improvements do you expect to see as a result of major improvements in your data centers? | CEO |
|---|---|
| Accelerate Growth | 16% |
| Mitigate Risk | 11% |
| Lower costs | 22% |
| IT as a competitive advantage | 10% |
| Other | 42% |

| What business outcomes does your CEO expect to see as a result of data center transformation? | CIO |
|---|---|
| Accelerate Growth | 10% |
| Mitigate Risk | 11% |
| Lower costs | 32% |
| IT as a competitive advantage | 12% |
| Other | 34% |

Respondents who are experiencing any data center problems are the most likely to initiate data center transformation. However, if the case for data center transformation is presented to stakeholders as an opportunity to meet the business goals of improving performance and mitigating risks while reducing operating costs and maximizing ROI, they see value in building data center transformation into their strategic planning process.

# Appendix

## Current Data Center Solutions

| Geographic distribution of data centers (average % per region) | CEO | CIO |
|---|---|---|
| % located in North America | 33% | 37% |
| % located in Europe | 33% | 31% |
| % located in Asia | 27% | 23% |
| % located in Africa | 0% | 0% |
| % located in Australia | 3% | 2% |
| % located in South America | 5% | 6% |

| How old is your oldest data center? | CIO |
|---|---|
| 1 to 2 | 7% |
| 2 to 5 | 22% |
| 6 to 10 | 22% |
| 11 to 20 | 33% |
| 21 to 30 | 7% |
| 30 + | 6% |
| Don't Know | 4% |

**[CIO only] What solutions (e.g. brand/vendor) are you using in your company's data centers today?**

| Hardware | CIO |
|---|---|
| IBM Mainframes | 13% |
| IBM AIX | 14% |
| HP Servers | 33% |
| Sun Servers | 8% |
| Other | 32% |

| Software | CIO |
|---|---|
| CA | 9% |
| Tivoli | 11% |
| HP | 23% |
| BMC | 7% |
| Other | 50% |

| Storage | CIO |
|---|---|
| IBM | 28% |
| HP | 23% |
| EMC | 20% |
| Other | 29% |

| On average what percent of your data center solutions spend is dedicated to capital expenditures? | CIO |
|---|---|
| 0 to 5 % | 25% |
| 6 to 10% | 14% |
| 11 to 20% | 10% |
| 21 to 30% | 14% |
| 31 to 40% | 5% |
| 41 to 50% | 10% |
| 50% + | 16% |
| NA | 6% |

| Do you expect to continue using solutions from your current vendors or manufacturers in the future? | CIO |
|---|---|
| Yes | 89% |
| No | 11% |