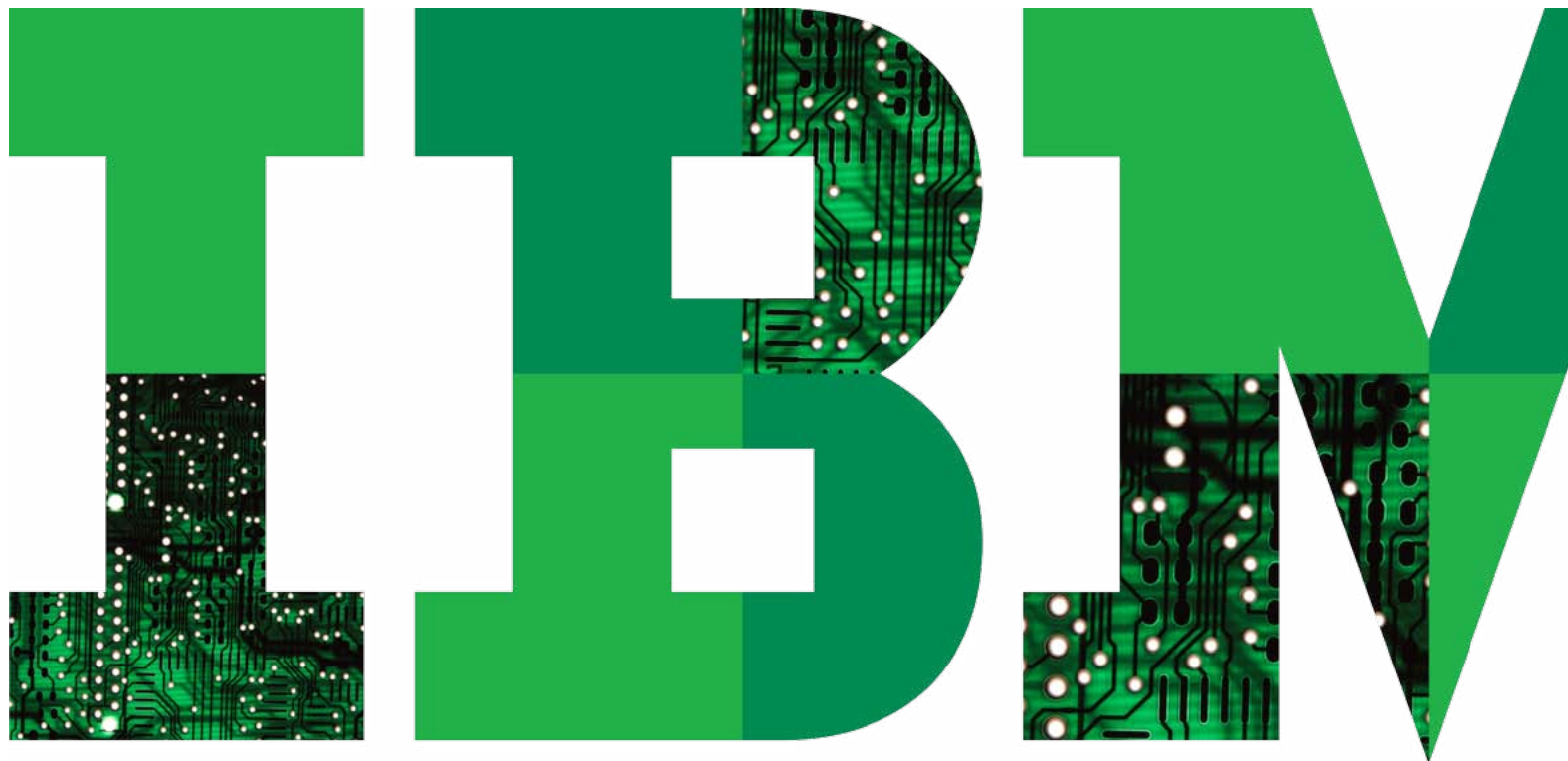# The Top 5 IT Budget Killers

Updated with new advice on fighting today's resource hogs

1

Storage expansion

Smart moves to make as data volumes grow and access demands increase

2

System complexity

How to cut through the tangle of data center management and focus on what really matters

3

Hardware sprawl

When it comes to server boxes, more is not necessarily better

4

The need for high availability

Build lean, smart IT systems that keep your business always on and always growing

5

Over- or under-provisioning

Get to a happy medium by adding or subtracting capacity as needed

Introduction

You've heard it a million times: do more with less. It may be good business, but as budgets shrink and IT demands grow, you may start to wonder if the people who are saying "do more with less" think that it's a magical incantation. Run the servers without electricity! Wave a wand so your data center takes care of itself! While we're at it, let's conjure up some rabbits and train them to install security patches.

You've already taken basic cost-cutting steps and saved the easy money. You know that you need to dig deeper. But where should you start? What's killing your IT budget?

The good news is that you're probably already staring right at the problem—it's just a matter of knowing what you're seeing and understanding what to do about it.

Many of the largest IT budget problems can be traced back to five big money drains:

- Storage expansion
- System complexity
- Hardware sprawl
- The need for high availability
- Over- or under-provisioning

1 Storage expansion	2 System complexity	3 Hardware sprawl	4 The need for high availability	5 Over- or under-provisioning

If you think that you already have these bases covered, you might want to think again and ask yourself five questions:

1. How efficient is the storage that you're using to support your exponentially expanding databases?

2. How much overtime is your DBA staff putting into managing servers and storage?

3. How much are you spending on all that hardware in your data centers?

4. What's the cost of the measures you put in place to make sure that your systems are available 24x7 and can grow with the business?

5. Are you sure that you've provisioned resources for optimal utilization?

If any of this sounds familiar, you're not alone. **This e-book will introduce you to five big IT budget killers—and some of the best ways to knock them out.**

1 Storage expansion **2 System complexity** **3 Hardware sprawl** **4 The need for high availability** **5 Over- or under-provisioning**

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IT Budget Enemy #1: Storage expansion

Summary

- Consolidate databases and warehouses
- Embrace data compression

- Free up high-value storage space
- Automate data archiving

We can't say that Gordon Moore didn't warn us. The idea that transistor density would double every two years was an alarm bell. After all, more transistors mean more information, which means more data. Still, even he couldn't have anticipated the traffic that has clogged data centers since the Internet became the central conduit of business.

Analysts estimate that in 2011, the amount of information created and replicated will surpass 1.8 zettabytes (1.8 trillion gigabytes)—growing by a factor of 9 in just five years. That 1.8 trillion gigabytes will reside in 500 quadrillion "files"—which is nearly as many bits of information in the digital universe as stars in our physical universe.[1]

Customer success: RI-Solution

IBM® DB2® Deep Compression saved up to 40 percent in total storage capacity required, translating into direct storage savings. Moving from Oracle to DB2 has reduced related database maintenance costs by almost 30 percent. In the immediate future, RI-Solution will not need to add further storage devices, avoiding significant CapEx and reducing system complexity. **Read more**.

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Depending on which data growth rate predictions you follow, that 70 TB database you're juggling now could easily top a petabyte (that's a thousand terabytes) within six years.

IT departments are already stretching their budgets for storage, and the demand is only going to grow. Enterprises are responsible for managing up to 85 percent of the world's data, and 70 percent of this data is created by individuals.[2]

To complicate the situation further, a lot of data can't be thrown away. It must be carefully managed from creation through disposal, to meet increasingly strict compliance regulations. At the same time, IT departments are under pressure to deliver rapid data access—regardless of where the information resides.

Fighting this IT budget killer calls for shrewd tactics. You can't just build bigger buckets—you need to find smarter ways to store that data. The four key strategies outlined on the following pages can help you win the battle against runaway data storage costs.

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1 Storage expansion | **2 System complexity** | **3 Hardware sprawl** | **4 The need for high availability** | **5 Over- or under-provisioning**

1. Consolidate databases and warehouses to make administration simpler. Eliminate redundant data from multiple sources to reduce the amount of storage needed and the effort required to manage the data.

2. Compress your data to save storage space. Compression allows you to use fewer bits to encode information. An ITG report commissioned by IBM suggests that most organizations can expect capacity reductions of 50 percent or more using data compression.[3]

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3. Archive data to free up high-value storage space and keep databases running smoothly. Once your databases are running lean and trim, keep them that way with an archiving strategy that improves your storage asset utilization. For example, store frequently accessed data on high-performance assets and archive noncritical data onto less-expensive media. In many cases, you'll be able to reclaim and consolidate storage, while saving your best equipment for critical production databases.

This approach can also reduce operational and management costs by reducing the number of different devices—and therefore software tools—your organization uses.

4. Automate data archiving. Identify a data archiving solution that best suits your business needs. A Gartner report recommends that every application have a data retention policy that specifies when data should be deleted. It also advises businesses to require that all

new applications have an archiving plan.[4] Archiving can also help you improve storage asset utilization; identify opportunities to reclaim, consolidate and optimize storage resources; and reduce operational and management costs by using fewer disparate devices and software tools.

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IT Budget Enemy #2: System complexity

Summary

- Simplify management
- Automate basic administration
- Outsource mundane admin tasks
- Prepare a backup and recovery strategy

The data center has never required so much time and attention as it does today—but who has the budget to support new staff? Instead, more and more work gets assigned to the DBAs who are around, which leads to those much-loved, 3 a.m. "get-in-here-and-fix-this-server-or-else" alerts on your BlackBerry. Since when did "do more with less" come to mean "do more with less sleep"?

A big part of the problem is that data centers have become so complex that administrators can't be as productive as they have been in the past. According to Gartner, "interactions with clients during the past 10 years indicate that organizations incur higher costs and database administrator resource usage because they support multiple, disparate DBMS products (the average is 25 to 50 percent more than need be)."[5]

"We switched from Oracle Database to IBM DB2 and cut our data management costs in half, while improving performance and reliability of business applications."

— **Sandro Reátegui,**
Systems Architect,
Banco de Crédito del Peru

Read more about how Banco de Crédito del Peru improved the performance and reliability of its business applications by migrating to DB2.

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This patchwork of solutions only serves to make the environment more time-consuming to manage. Today, DBAs manage an average of 35 databases each—and this number continues to increase.[6] Add to that the work that needs to get done on strategic projects, and you may be looking at major overtime charges. If anything falls through the cracks, hourly downtime costs can top USD1 million or more for technology-dependent companies, according to analyst estimates.

The key to combating complexity is to consolidate your systems as much as possible and automate as many basic processes as you can. By doing that, you'll reduce the amount of basic maintenance work and give your DBAs more time to focus on strategic (and more interesting) projects.

1 **Storage expansion**

2 **System complexity**

3 **Hardware sprawl**

4 **The need for high availability**

5 **Over- or under-provisioning**

Here are four starting points:

1. Simplify management. According to Forrester Research, 90 percent of companies have two or more DBMS products to meet business requirements— but standardizing on just one or two DBMS products can help cut costs by reducing administration efforts and by consolidating new database license purchases by obtaining higher discounts. Companies can typically save 25 percent or more through DBMS standardization.[7]

2. Automate basic database administration functions. Automate everything you can. You'll help minimize errors and cut costs, and your staff will spend less time on repetitive drudgery.

3. Outsource routine activities to give in-house DBAs more time for new projects. If you have more than 10 DBAs, consider outsourcing routine administration activities like monitoring and backup management—after conducting a careful return on investment (ROI) study, of course. An ITG study revealed that 73 percent of organizations cited choosing a database that can be easily administered as a primary advantage, due to low levels of DBA activity and staffing.[8]

4. Prepare a comprehensive backup and recovery strategy. It's no secret that unplanned database downtime can hurt your business. Consolidating systems and streamlining management will make backup and recovery easier, but don't leave things to chance: prepare in advance by figuring out how you will recover from unplanned service interruptions, protect your data and maximize application availability. Calibrate your plans by calculating how much it would cost your organization (lost revenue, replacement costs and so on) if a given resource was temporarily or permanently unavailable. Knowing those figures will help you create a scope for your strategy and help you sell the plan to the rest of the business.

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IT Budget Enemy #3: Hardware sprawl

Summary

- Virtualize to reduce the amount of hardware in your space
- Consolidate to stuff more data in your space
- Replace systems with energy-efficient hardware to cut energy cost in your space

The next IT budget killer isn't hard to find—just open the door to your data center and look around. Do you see a room full of servers, each supporting one or two applications? Small, cheap servers may help curb IT spending in the short term, but it isn't always the most cost-effective long-term choice. Don't feel bad. Server sprawl happens to the best of us.

Server sprawl is especially deadly to IT budgets. More systems usually mean more complexity and maintenance (see Budget Enemy #2 for how that story turns out), and more servers definitely mean more power and cooling costs. For many companies, powering and cooling data center hardware accounts for a large chunk of their total energy bill.

"During the migration, DB2 Deep Compression achieved an average of 48 percent saving on data volumes. In subsequent tests, on precisely the same server infrastructure, the combination of compression technology and DB2 performance reduced batch job run times by an average of 15 percent."

— **Thomas Brauchle,**
Director Corporate Shared Service, Knorr-Bremse

Read more about how Knorr-Bremse cut operational expenses for its SAP environment by moving to DB2.

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Tackling server sprawl can be a big job, but let's start with the basics. Start by thinking about how to pair applications with the hardware that can best support their particular needs. As a general rule, leverage the most efficient platforms first. And don't feel bad: server sprawl can happen to the best of us.

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1 Storage expansion	2 System complexity	3 Hardware sprawl	4 The need for high availability	5 Over- or under-provisioning

Here's a quick guide to follow when dealing with budget-killing hardware:

1. Virtualize. Virtualization is a good strategy for reducing the number of physical servers in the data center while dramatically increasing computing capacity. Virtualized servers provide more efficient space utilization and more effective energy consumption than stand-alone servers. Need more reasons? Then consider this: virtualization is a good way to add redundancy and prepare for disaster recovery.

2. If you can't virtualize, consolidate. Consider hosting the application on a blade server. Consolidating on denser equipment may offer the highest ROI of any IT infrastructure initiative: you get reduced maintenance, floor space and power consumption while reducing data center complexity (which has the nice side effect of lower management costs), improving responsiveness, enhancing resiliency and shortening the time to deploy new servers.

3. If you can't virtualize or consolidate, replace. If neither of these platforms works, choose the most space- and energy-efficient individual servers available. Replacing legacy servers with higher-performance, higher-capacity systems designed with efficient thermal characteristics and power delivery can be an effective way to cut power consumption and costs.

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IT Budget Enemy #4: The need for high availability

Summary

- Compress and archive little-used data
- Consolidate and virtualize to boost resiliency
- Cluster systems to preserve high availability
- Centralize administration

Businesses today can't operate without information—even for a moment. And because most enterprise information is contained within IT systems, it is absolutely critical that those systems be available whenever your employees or your customers need them. Now you're talking about 24x7 availability, meaning that your systems have to scale along with your workloads, lest they become so sluggish as to not be usable. But scaling out by adding servers raises hardware and maintenance costs, and the wrong storage configuration can cause major delays in delivering key information.

Luckily, several of the same strategies that help combat storage, complexity and hardware costs can also help you fight this IT budget killer.

"Now as usage increases, we can balance and share the load using active-active technology in DB2 9.7. When you have that kind of available system, you really gain the confidence of the customer and you can use your e-channel as a real differentiator in the market."

— **Anuprita Daga,**
Chief Manager of IT,
Reliance Life Insurance Company

Read more about how Reliance Life cut TCO by 50 percent when it moved to an IBM DB2 and IBM Power® platform.
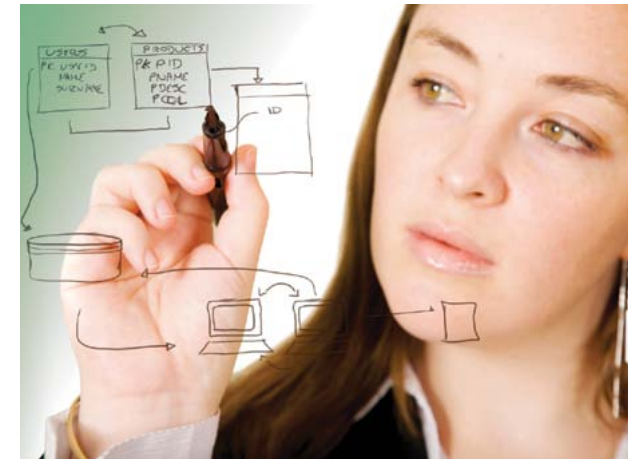
1. Compress and archive infrequently accessed data. Moving little-used data to slower, less costly media boosts network performance for the data that employees and customers need to access frequently—and fast. Compression helps minimize the storage space required, which plays a part in maintaining scalability, and thus availability.

2. Consolidate and virtualize. In some cases, simplifying the infrastructure makes business resiliency options more affordable by reducing the number of licenses required. Server and storage virtualization management tools can practically eliminate planned and unplanned downtime. Work

also can be shifted to other physical devices so that maintenance can be performed without disrupting operations.

3. Use clustered configurations to safeguard high availability. If it doesn't make sense to consolidate your applications onto a smaller number of large servers, using clusters of servers can offer system redundancy and failover in the case of downtime or performance degradation. Clustered servers can be configured to automatically restart a troubled application on designated backup hardware to protect high availability. Servers can also be used to easily scale up and scale out as transaction volumes grow, fully utilizing investments in disaster recovery hardware.

4. Centralize administration functions. Streamlining routine administrative tasks through centralized automation and control allows your IT staff to focus on supporting the business instead of babysitting equipment.

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IT Budget Enemy #5: Under- and over-provisioning

Summary

- Scale seamlessly
- Look for "pay-as-you-go" options

Underutilizing your IT resources is one of the most costly mistakes your enterprise can make—equipment that's not being used is money and time wasted. But at the same time you can't afford not to have resources available when demand spikes suddenly.

How do you resolve this dilemma? Do you provision for an average load and hope that things even out? Do you provision for your peak load and hope your organization will absorb the extra capacity as it grows? Do

- Consider cloud computing

you under-provision, and hope that business users who are turned away during peak periods will revisit when things are a bit slower? The word that these scenarios have in common is "hope"—and we all know that "hope" is not a strategy.

Thankfully, several considerations can help you better manage and support planned and unexpected workload peaks without breaking the bank, so you can mitigate risks of under- and over-provisioning.

Call for cloud gets louder

In the 2009 IBM CIO Study, one-third of CIOs planned to pursue cloud computing technologies to gain a competitive edge. The 2011 study shows a dramatic increase, especially in the media and entertainment, automotive and telecom industries where more than two-thirds of CIOs said they will focus on cloud.

Seven out of every 10 CIOs in the US, Japan and South Korea and 68 percent of CIOs in China identified cloud as one of their top priorities.

To learn more about the 2011 IBM CIO Study, visit **ibm.com**/ciostudy

| 1 Storage expansion | 2 System complexity | 3 Hardware sprawl | 4 The need for high availability | 5 Over- or under- provisioning |

1. Scale capacity seamlessly and transparently. As application usage grows, the databases must grow in step to ensure that the business continues operating smoothly and without bottlenecks. This is why the ability to add or remove servers easily is essential: you want to be able to change capacity without having to perform complex tuning or update application code. Reducing deployment complexity also reduces the amount of time and effort your staff spends on the actual deployment—another budget-saving bonus.

2. Look for "pay-as-you-go" options. Does a "pay-as-you-go" model work in a traditional deployment environment? Sure it does. Remember, you don't have to put everything on this model—just the components that aren't your core competency and are easy to track and manage on a per-use basis. This could be as simple as activating additional processor cores on your systems and paying for associated license costs on a permanent basis. Or, you can leverage sub-capacity pricing and on-demand pricing models on an as-needed basis.

3. Consider cloud computing as a platform for secondary applications and services. Not every application and service requires the same level of service-level agreement. Shifting your applications to the cloud means you pay only for what you need, avoiding the maintenance and cost of paying for underutilized servers during slower business cycles. Plus, you can make sure your highest-value resources are dedicated to the most critical of your mission-critical systems, keeping them fully utilized and giving you the most bang for your infrastructure buck.

1 Storage expansion   2 System complexity   3 Hardware sprawl   4 The need for high availability   5 Over- or under-provisioning

Take control of your IT budget

So now you know exactly what's killing your IT budget and it's time to apply the cures. With limited resources, where do you start?

Your first step should be to take an inventory of your data assets, hardware, software and administration staff. This baseline will help you identify the lowest-cost, highest-impact areas where you can make a dent in the bottom line.

Stay focused as your projects get underway. Concentrate on one or two initiatives at a time to make sure you get maximum value out of your efforts. Use a broad, balanced approach that takes both data centers and applications into account and aims to save money in several ways at once. Your IT budget enemies have many faces—your defense against them should too.

Finally, revisit the initiatives periodically to measure results and make adjustments.

Combating IT budget killers is an ongoing job. Good luck!

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Get additional information about saving costs in the data center by visiting **ibm.com**/software/data/itbudgetkillers

Want more? IBM has plenty of resources to help you fight off threats to your IT budget:

Learn what's new in IBM smarter computing

Investigate the IBM ROI tool: IBM DB2 Compression

Investigate the IBM ROI tool: Moving to DB2

Ask yourself: Is your database ready for your company's future?

Read the report from Triton Consulting: Quantitative Complexity Analysis for DB2 9.7 v Oracle 11gR2

Learn about application cluster transparency: DB2 pureScale feature

Explore smarter computing: Break free to IBM

Read more about IBM Smarter Systems and the benefits of a workload optimized approach

Discover how IBM DB2 pureScale provides extreme capacity with continuous availability

Watch the demo: Discover DB2

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