

CRACKING THE CONSOLIDATION CODE

GETTING IT RIGHT ... AND GETTING IT DONE!



INTRODUCTION: A FRESH LOOK AT IT CONSOLIDATION

On a percentage basis, few jurisdictions have faced the extreme budget pressures that have beset the city of New York. Relying heavily on its banking and financial sector, the Big Apple was one of the first jurisdictions hit by the economic crisis that became a national recession. Mayor Bloomberg announced a tough budget proposal that cut 23,000 jobs, reduced certain government services and raised fees. As the economic crisis spread, soon state agencies, cities, counties, school districts and even federal offices across the nation were feeling the pinch as well.¹

In such an environment, it's no surprise that the pressures on government IT organizations are high. We have always been challenged to do more with less, but it seems that we are now being challenged to do *much more* with a *whole lot less* than we had just a short time ago. These challenging economic times have made the difficult job of being a public CIO even tougher.

It's also led to a rapid acceleration of IT consolidation efforts nationwide.

Consolidation has been a top priority for federal offices, state agencies, cities, counties and school districts for a long time. It's not new that the issue has the attention of top policy officials.

What is new, however, is that we are seeing existing projects accelerated and new projects getting started. Jurisdictions that have already consolidated proved to be better able to weather the economic storm, and others are racing to catch up. As one example, New York City's *Connected City* project,

includes an ambitious IT consolidation effort to trim \$300 million from the budget.²

DEFINING IT CONSOLIDATION

While practically all of us can agree that we are implementing some form of IT consolidation, we can't quite seem to find consensus on what that means. Unlike phrases like "shared services," "Web 2.0," or "cloud computing," IT consolidation has never quite risen to the level of being defined as a term of art. It is a bit of all of the terms we just mentioned – but identical to none of them. Having reviewed a multitude of projects across the country and talked to numerous top officials, we have arrived at the formulation below:

IT CONSOLIDATION [ahy tee kuh n-sol-i-dey-shuh] (noun) is the process of removing certain common technology functions from a number of separate operating divisions and combining them to form a common shared services entity that acts as a service provider back to the original divisions.

At its core, IT consolidation is about a structural realignment in your organization that has a deep effect on the way that services are provisioned, delivered and ultimately used. If a transformation towards shared services is the *goal*, then IT consolidation is the *process* used to attain that goal.

There are a number of terms bandied about in the world of IT consolidation that often have confusing or inter-related meanings. Some are used as synonyms, despite the fact that they may refer to completely different concepts all together. Following, on page 3 is a summary of the common terms that arise in discussions about IT consolidation and how they fit into the overall picture.

MAKING THE CASE FOR CONSOLIDATION



ECONOMICS

- ✓ Less duplication
- ✓ Better utilization
- ✓ Shared resources
- ✓ Operations efficiency



SIMPLICITY

- ✓ Faster provisioning
- ✓ Ease of maintenance
- ✓ Shared support staff
- ✓ Consistent training



SECURITY

- ✓ Newer tools
- ✓ Consistent policies
- ✓ Policy adherence
- ✓ Better architecture



GREEN

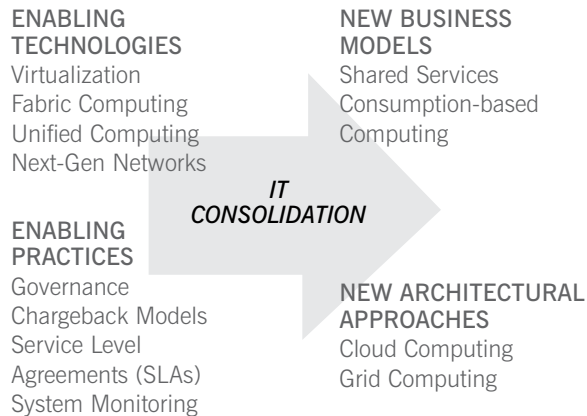
- ✓ Less power
- ✓ Less e-waste
- ✓ Better cooling
- ✓ Equipment reuse



NEXT-GENERATION APPLICATIONS

- ✓ Telepresence
- ✓ E-government
- ✓ Network Modernization
- ✓ Private Cloud Applications

DEMYSTIFYING THE TERMINOLOGY OF IT CONSOLIDATION



Another common misconception is to equate four terms as if they mean the same thing: consolidation, centralization, outsourcing and offshoring. While these four concepts can sometimes appear in combination in a given project, they *do not mean the same thing*. Confusion over these terms has led to a great deal of unnecessary consternation among organizations and team members that should be working together towards a common goal. To help alleviate this confusion, we have illustrated the difference between the terms at the bottom of the page.

“IT’S DÉJÀ VU ALL OVER AGAIN”ⁱ

At this point, you may be saying that the concept of IT consolidation sounds eerily familiar. We spoke to Dennis Donovan, deputy CIO and chief of Infrastructure Operations at the Federal National Business Center, who pointed to the paradox in which “everything that was old is new again.” Donovan’s organization is

a federal agency that provides consolidated IT services to a number of other agencies, including the Department of the Interior, Office of Personnel Management, and Immigrations and Customs Enforcement. Donovan is a proponent of consolidation, but he also recognizes that it’s not an entirely new idea.³

Donovan sees parallels between today’s world of multiple operating systems, virtualization, cloud computing and flexible resource allocation with the older approach of “centralized computing.” By “centralized computing,” Donovan is referring to the world of mainframe time sharing and shared resource pools.⁴

Even the current wave of consolidation has been going on for a while. Back in 2007, the National Association of State CIOs (NASCIO) found that 62 percent of state governments reported that they were implementing or planning to implement IT consolidation.⁵ Ann Margulies, CIO for the Commonwealth of Massachusetts, further notes that “the private sector went this way a long time ago.”⁶

WHAT’S NEW THIS TIME?

The current popularity of IT consolidation is not only a result of economic factors but also of the rise of certain new enabling technologies. These technologies have changed the way that data centers operate, and have made new levels of efficiency and consolidation possible.

Despite the already noted connection to the past, Dennis Donovan sees new things on the current landscape that are powering IT consolidation. New capabilities in virtualization, for example, were essential to Donovan’s success in providing consolidated services to such a large and varied set of federal agencies. In Donovan’s view, “good server virtualization combines the best of both worlds.” He says his organization’s strategy is “open source plus mainframe, plus lessons learned from both sides (old and new).”⁷

CONSOLIDATION

Removing common technology functions from separate operating divisions and combining them to form a shared services entity that acts as a service provider back to the original divisions



CENTRALIZATION

Moving all employees, services and activities to a single organization with centralized planning and operational authority



OUTSOURCING

Shifting services that had been performed by government employees to a private company



OFFSHORING

Purchasing services from a private company based outside of your own country

ⁱ As quoted by the legendary New York Yankees superstar, Yogi Berra. For more information on this and other “Yogiisms,” visit http://en.wikipedia.org/wiki/Yogi_Berra

TECHNOLOGY TRENDS:

WHAT'S AFTER VIRTUALIZATION?

There is no doubt that the advent of virtualization has been essential to the current wave of IT consolidation. Given the importance of virtualization to the current effort, it's worth putting that enabling technology in context.

EARLY BEGINNINGS

Virtualization began in the 1960s as a technique to allow one mainframe computer to run a number of different operating systems. It wasn't until the late 1990s that it was applied to client-server hardware and operating systems.

GOVERNMENT USE TAKES OFF AFTER 2005

Virtualization usage has skyrocketed in government and public education. Reflecting growing prominence, virtualization was ranked as the No.1 priority technology by NASCIO in 2008 and 2007. The results have powered major public IT consolidation efforts. The scope of virtualization has also increased as the concept is applied not just to servers but to storage, networks and all aspects of IT infrastructure.

IS THE UNIFIED DATA FABRIC THE NEXT STAGE?

The next stage in the evolution of this critical area is to build the concept of virtualization into the hardware itself – from the circuit board and bus on up. The concept of a unified data fabric, also called *unified* or *fabric computing*, has arisen to meet this need. Top experts say that this new architecture will power IT infrastructures in years to come as the anointed successor to today's virtualization.

Unified fabric collapses two different connection protocols and switches to one, which brings server and storage together. Memory is much more easily taken advantage of due to the inherent virtualization built into the hardware itself. The result: a much faster and more scalable system that takes the successes of today's server virtualization to the next level.

The business and program side is also different this time around. Organizations face far greater threats from hackers, terrorists and organized cyber criminals than ever before. At the same time, IT systems are moving out of the back office into every aspect of an organization. This move makes many of these new systems truly mission critical and drastically increases the requirements for disaster recovery and business continuity.

When you consider these several factors — virtualization, cyber-security, and increased risks to business continuity — it's clear that the current wave of IT consolidation has some challenges and opportunities that are all its own.

BEST PRACTICE SURVEY

GOVERNANCE FOR SHARED SERVICES

Al Rosabal, chief technology officer for the city of Denver, says that proper governance was critical to his city's highly successful IT consolidation effort. In Rosabal's view, the best practice of IT consolidation falls into a middle ground between centralization and de-centralization. Either extreme, in Rosabal's view, is to be avoided.⁸

Finding the middle ground in terms of governance paid off for the city of Denver.

Denver was able to:

- ✓ Consolidate 60 systems into a common storage area network (SAN)
- ✓ Streamline six email systems down to two
- ✓ Simplify multiple backup systems into one
- ✓ Merge three help desks into one
- ✓ Save \$1.2 million on licensing costs alone
- ✓ Improve access for users and sharing of information⁹

Framed in this manner, IT consolidation is the process of moving from a typically de-centralized environment to one that is based on a shared services approach. Note that *consolidation* does not equal *centralization*, as many practitioners are quick to point out.

DEFINING AND ENFORCING SERVICE LEVELS

Dennis Donovan, deputy CIO for the federal National Business Center, notes that defining service levels is a real challenge, especially when it is a government organization on both sides of the relationship as the customer and service provider. Service levels are often only partially understood, and are rarely documented. This, in Donovan's view, is a problem.¹⁰

Donovan took steps early to make sure that the service level expectations between his agency and the agencies it serves were clear, measurable and documented in a written agreement. While the prospect of negotiating a written agreement with government agencies on both sides may seem daunting, Donovan cites it as one of the most essential tools to IT consolidation success.¹¹

TECHNOLOGY CONSIDERATIONS

The Obama Administration has recently issued new policy direction calling on federal agencies to begin an ambitious program of inter-agency data center consolidation. The initiative will encompass more than 1,200 federal data centers (up from an initial estimate of roughly 900) and involve sweeping changes to governance, technology and service delivery.

John Rucker is a key official at the U.S. Veterans Administration, who runs just such a large data center in Austin, Texas. He is director of Corporate Data Center Operations and program manager for the VA's National Data Center Program.

Austin has a 30,000 square foot computer room, and manages all of the VA's financial systems, as well as the national health care centers and data warehouses. Together, the VA's three data centers pay out more than \$100 billion per year. Rucker is currently in the process of consolidating the IT operations of the VA's hospital network. Two out of four national regions have already been completed.

Rucker credits much of the VA's success to a highly effective governance process initiated by his boss, VA CIO Roger Baker. Baker's process breaks down multi-year, "big bang" projects into six-month milestones. Each project is reviewed every six months, and underperforming projects are quickly identified. Baker's improved governance has already trimmed more than \$50 million from the agency's budget.

Rucker advised those embarking on consolidation: "Don't view it as a technology exercise ... view it as a political and people exercise. Those are the areas where you will spend most of your time."

He was also quick to note that the technology needs to be managed tightly as well. For example, "Many legacy systems were written before people were using Web browsers to access them ... not all of that software is WAN aware." Having a sound network architecture with modern capabilities is critical but often an overlooked part of IT consolidation.

FUNDING MODELS

There are a wide range of funding models available to IT consolidation practitioners, and each has its positives and negatives. When it comes to funding, there is no "one size fits all" approach that works.

A chargeback model tends to be the most common way to allocate costs in a consolidated environment. In this approach, the centralized entity parcels out the cost of each customer organization's share of the infrastructure and charges that amount back to the customer on a regular schedule. This is a comparatively easy way to transition from a non-consolidated to consolidated model.

Public-private partnerships can also be a helpful strategy for funding an IT consolidation initiative in the public sector. It is sometimes more cost effective for a private company to provide the initial capital investment for the up-front costs of consolidation and transition activities, and to then be paid back over time as fees are charged for the use of the infrastructure.

No conversation about the funding aspects of consolidation would be complete without a mention of the perennial issue of "the color of money." While this is mostly an issue at the state level, the problem can affect cities, counties and school districts as well. The essential conundrum is this: Project funding sometimes comes with restrictions that prohibit co-mingling it with other funds or sharing it for other purposes. This is often the case for grants, and it applies to much of the stimulus dollars received in recent months. While this challenge requires some diligent work to manage, it is by no means insurmountable. Most governments have succeeded by increasing the sophistication of their auditing, tracking and cost allocation systems in order to rise to that particular challenge.

REALIZING THE BENEFITS

OPERATIONAL BENEFITS FOR REAL COST SAVINGS

The nationwide recession may be hitting some jurisdictions harder than others, but everyone is facing some downward pressure on their budget. At the same time, citizens are demanding more and better services from federal, state, city, county and school district administrations. While the ARRA provided some degree of fiscal relief, it didn't completely close the gap.

HANDLING “UNIQUE REQUIREMENTS”

One common roadblock to consolidation is when agencies believe that their requirements are too different from those of another agency in order to share a consolidated infrastructure.

Investment in a consolidated infrastructure that is open, standards-based and flexible can help solve unique requirements such as security, where different groups can have different requirements. With the right network in place, it can be easy to customize.

When unique business problems are the challenge, a healthy dose of application rationalization can help. Ask: Could a single off-the-shelf solution replace two specific, purpose built systems? Are the features of the two systems really that different, or is the problem a matter of perception?

When the conflict is technical, a good virtualization approach can come in handy. Steve Reneker, CIO of the city of Riverside, Calif., was able to see the power of that approach firsthand. Out of 188 total applications managed by Reneker’s team, all but three made it successfully to the new virtualized environment. “It’s a phenomenal change,” he said, “definitely the biggest bang for the buck in our shop.”

(Center for Digital Government Interview, September 9, 2009)

Commonwealth of Massachusetts CIO Anne Margulies noted efficiency improvements as the first of three key benefits sought by their consolidation initiative. “Our plan is to reap savings through consolidation that we will be able to reinvest in our IT infrastructure and our IT workforce that will help make government services more efficient,” said Margulies.¹²

For Massachusetts, the gains in operational efficiency are critical. “Part of what I have been communicating for the past several years is that our state government has been under-investing in technology for some time. We have been underfunded. ... We need to become more efficient so we can spend our resources more wisely.”¹³ Margulies plans to reinvest the savings in new services and improvements in cyber-security.

NOT JUST ABOUT SAVING MONEY

While the financial benefits of IT consolidation are certainly attractive, there are non-financial benefits that also deliver significant value. Margulies is quick to point out that the non-financial benefits of consolidation are compelling in their own right. While Margulies notes that there will be efficiency gains from the “elimination of duplicate IT systems,” these savings will be re-invested in new projects and programs. Margulies said, “The current approach to managing IT is too complex, too difficult to maintain and impossible to keep secure.”¹⁴

Experts around the county have pointed to a growing number of non-financial benefits that help make the case for consolidation. Consider the following:

- ✓ **reduced operational complexity** in a shared, virtualized environment;
- ✓ **easy provisioning of new infrastructure** as a further benefit of virtualization;
- ✓ **better utilization of existing assets** by sharing hardware and network assets;
- ✓ **increased security** through new tools, better network architecture, and consistent standards;
- ✓ **positive environmental** Impact from reductions in power consumption and e-waste;
- ✓ **better approach** for disaster recovery and business continuity; and
- ✓ **ability to deploy next-generation applications** on a more modern and stable infrastructure.

The last point bears repeating. We know that next-generation applications like telepresence, unified communications, telemedicine, video arraignment, and collaborative e-government solutions require more and better IT infrastructure.

When we asked Margulies if IT consolidation across data centers and networks would position Massachusetts for innovative new services, she was emphatic in her response. “No doubt about it ... If we work together to move to a new shared, higher speed network, we will be in a position to support not just more efficient networks but new services like e-health and integrated public safety. ... All of those innovations will involve much higher bandwidth.”

It’s clear that the benefits of the present wave of IT consolidation will go far beyond the short-term economic results. When this wave is all said and done, we will also have improved our ability to meet the needs of our constituents.

CONCLUSION: MOVING FORWARD

Progress of any sort is never easy, but the promise of IT consolidation holds a great deal of promise for better efficiency, effectiveness and security. We have learned important lessons from the past, and brought innovative new technologies to bear like virtualization.

When we consider the lessons of the best practices mentioned in this paper – from the city of New York, the city of Denver, the federal National Business Center, the city of Riverside, VA's National Data Center Program, the state of Tennessee, and the Commonwealth of Massachusetts – the case is compelling. If we get governance right and document measurable service levels; if we choose the right technology and funding model, then compelling benefits will be obtained. As technology evolves in new directions like unified and fabric computing, IT consolidation will continue to prove itself as an extremely valuable endeavor.

When asked for her most important final thoughts, Massachusetts CIO Anne Margulies was unequivocal in her commitment to consolidation. “The most important thing to realize is that this is inevitable ... It’s not just about the current CIO... Even if we weren’t in a budget crisis, this is the right thing to do.” It is also critical to work as a team through a collaborative and proven governance structure. “This is really impossible for a CIO to accomplish on his or her own. You need to build a senior team that understands it and is committed to helping to make it happen.”

THE CASE FOR CONSOLIDATION: STATE OF TENNESSEE

Mark Bengel, CIO for Tennessee, has successfully consolidated nearly 80 percent of the state’s servers. While his number of employees is down by 17 percent due to economic conditions, that hasn’t stopped progress. Even with the decreased number of employees, Bengel now supports 81 percent more servers and 175 percent more databases.

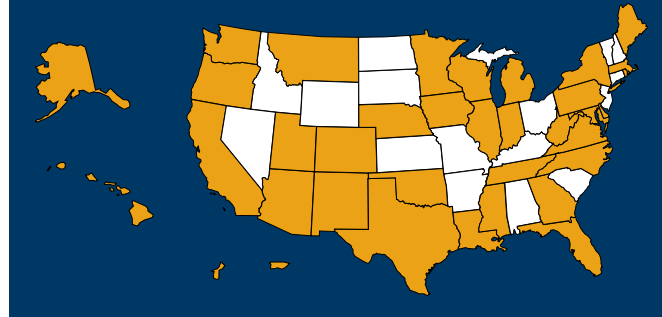


“WE HAVE BEEN VERY SUCCESSFUL AT USING TECHNOLOGY TO DO MORE WITH LESS.”

Mark Bengel,
Tennessee State CIO

Source: Interview with Mark Bengel, CIO for the State of Tennessee, December 4, 2009.

STATE GOVERNMENTS REPORTING IT CONSOLIDATION AS A TOP PRIORITY (IN ORANGE)



Source: National Association of State CIOs, 2009

ENDNOTES

1. “Mayor’s Plan Calls For 23,000 Fewer City Jobs,” NBC New York, January 30, 2009. <http://www.nbcnewyork.com/news/local-beat/20000-City-Jobs-Could-Be-Cut-Friday.html>
2. Newcombe, Todd. “New York City’s Connected City Initiative,” *Public CIO*, December 28, 2009.
3. Dennis Donovan, Deputy CIO, National Business Center, Panel Address and Questions, *Government Technology Workshop*, Denver, Colorado, October 2, 2009.
4. Ibid.
5. “Enterprise Data Center Consolidation in the States – Strategies and Business Justification,” NASCIO, August 2007.
6. Ann Margulies, CIO for the Commonwealth of Massachusetts, Interview with John Miri, January 19, 2009.
7. Dennis Donovan, Deputy CIO, National Business Center, Panel Address and Questions, *Government Technology Workshop*, Denver, Colorado, October 2, 2009.
8. Al Rosabal, CTO for the City of Denver, Keynote Address and Questions, *Government Technology Workshop*, Denver, Colorado., September 25, 2009.
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10. Dennis Donovan, Deputy CIO, National Business Center, Panel Address and Questions, *Government Technology Workshop*, Denver, Colorado, October 2, 2009.
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12. Ann Margulies, CIO for the Commonwealth of Massachusetts, Interview with John Miri, January 19, 2009.
13. Ibid.
14. Ann Margulies, CIO for the Commonwealth of Massachusetts, Keynote Address and Questions, *Government Technology Workshop*, Boston, Mass., December 2, 2009.



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After a successful career as a private sector software executive, Miri was appointed by the Texas Governor to the top regulatory board overseeing statewide electronic government. He went on to lead transformational projects for two successive Texas State Chief Technology Officers and has become an advisor and close confidant to leading state and local government CIOs around the nation. As the former Director of E-Government and Web Services for the State of Texas, Miri led the state to breakthrough results of 829 online services, 83 million citizen financial transactions, and \$5 billion in online revenue. He helped found three web-based technology companies that leveraged Web 2.0 and cloud computing to achieve dramatic results for clients in the commercial markets. Miri

has been a passionate advocate of next generation Internet technologies for more than a decade and is a nationally recognized speaker and author on government technology.

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