**FEDERAL
NETWORKING
SOLUTIONS**

The Necessity of Network Modernization

Investing in the transformation of Federal
networks today can dramatically save time
and money—now and in the future.

BROCADE

If you are part of a Federal agency, your budget will likely get worse before it gets better. According to the Congressional Budget Office (CBO) and the Office of Management and Budget (OMB), Federal agencies should expect 2014 to be a lean year with total discretionary budgets down four to five percent ($45 billion to $57 billion).[1]

After spending most of 2013 aggressively searching for places to reduce costs, agencies have captured most of the readily apparent savings. The decisions only get tougher from here: headcount, new services, even security versus productivity. Everything is up for debate.

But it doesn't have to be this way. Federal agency IT organizations could save between $1.05 billion and $2.24 billion annually—and more than $5 billion over the next five years—simply by modernizing their network systems and procurement strategies. This is money on the table, available immediately.

AGENCIES NEED THE MONEY

Federal budgets face unprecedented cuts. Without Congressional action, Sequestration will cut $90 billion annually from discretionary budget authority through FY 2023. All told, FY 2014 will be the toughest year, with the lowest level of discretionary spending forecast for the next decade.

Traditional cost-cutting initiatives just aren't able to keep up. What's worse, after spending most of FY 2013 focused on reducing expenses, agencies have captured most of the readily apparent savings. The decisions only get tougher from here: headcount, contractors, new capabilities, even security versus productivity. Everything is up for debate.

It doesn't have to be this way. Right now, Federal agency IT organizations could save between $1.05 billion and $2.24 billion annually—more than $5 billion over the next five years. This is money on the table, available immediately.

A CLEAR SAVINGS OPPORTUNITY

At the heart of the savings opportunity is a simple fact validated by Gartner, MeriTalk, and 200 Federal network professionals: Networks based on a single vendor are vastly more expensive to operate and maintain than modern, multivendor networks. According to Gartner research, the introduction of a second vendor into the network reduces the Total Cost of

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1   http://www.cbo.gov/publication/44195, http://www.whitehouse.gov/sites/default/files/omb/budget/fy2014/assets/14msr.pdf

Ownership (TCO) by 15 to 25 percent over a five-year period.[2]

Those savings can be substantial. Based on primary research conducted by Gartner and MeriTalk, Brocade can demonstrate how the Federal government could save an estimated $5 billion over five years simply by:

- Moving from single-supplier to multivendor heterogeneous networks
- Reducing or eliminating the use of proprietary protocols
- Embracing open standards-based network design and implementation
- Defining requirements in terms of features, functions, and capabilities without regard to a particular vendor
- Using full and open competition for IT acquisitions

A SIMPLE FORMULA: PROVEN SOLUTIONS

Agencies can take simple steps that make a big difference. Based on the actual experience of Federal users, infrastructure independence pays off with 94 percent of agencies with multiple vendors claiming savings tied specifically to that approach.[3]

Here's how agencies can benefit.

Competition

A fundamental problem faced by agencies is that a large portion of Federal government networks are designed around proprietary protocols supported by a single vendor. The Federal government spent an estimated $26.9 billion on networks from Fiscal Years 2007-13. Eighty-three percent of that spending went to a single hardware vendor.
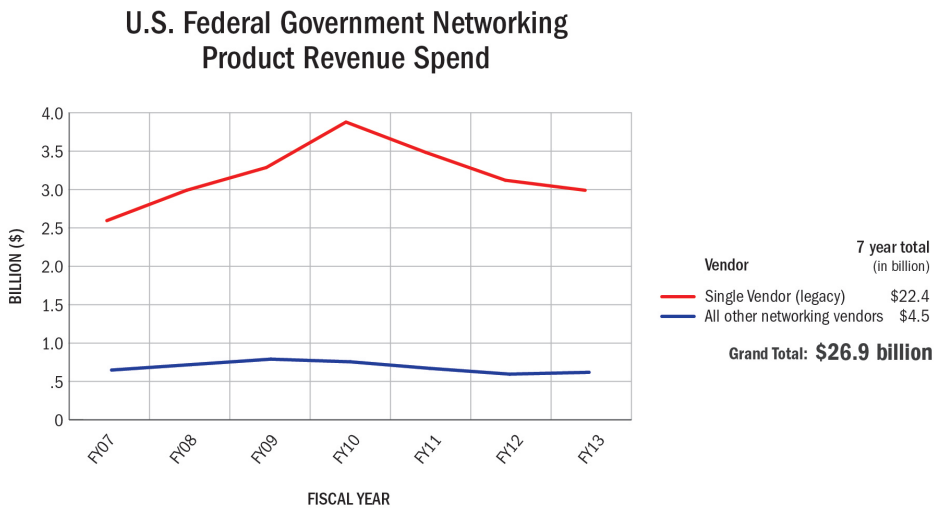

U.S. Federal Government Networking Product Revenue Spend

Vendor	7 year total (in billion)
Single Vendor (legacy)	$22.4
All other networking vendors	$4.5

Grand Total: **$26.9 billion**

Figure 1.
U.S. federal government spending in the past seven years.

This lack of competition is staggering. In comparison, the largest server manufacturer—IBM—owns just 29 percent server market[4] and the largest Systems Integrator (SI)—Lockheed Martin—owns just 14 percent of SI market share.[5] Even the iPhone commands just 40 percent of the market it essentially created.[6]

In keeping with basic economics, less competition drives higher prices. Agencies pay more for

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2   Op. cit. Gartner
3   Op. cit. MeriTalk
4   http://www.zdnet.com/q2-global-server-market-revenue-shipments-down-on-weak-
    demand-7000019935/
5   http://washingtontechnology.com/toplists/top-100-lists/2012.aspx
6   http://bgr.com/2013/10/04/apple-samsung-us-market-share/

initial purchases, more for service contracts, more for training, and more for future product upgrades. Monopolies are invariably bad for buyers.

Competitive, multi-manufacturer procurement drives down pricing in both the short and long term. Forced to bid against competitors, vendors must lower their prices to win Requests For Proposals (RFPs). Gartner found that capital costs fell 30 to 50 percent when a second infrastructure vendor was introduced.

At the same time, multivendor competition ensures that the cost of every service contract, upgrade, and training program in the future is made in the context of competitive pricing.

BENEFIT: Potential savings from $590 million to $1.2 billion—all available in the current year. In addition, multivendor competition means lower capital expenses in an era where multiyear capital is extremely rare.

Simplification

The standard justification for paying higher initial prices is that consolidating networks with a single vendor increases compatibility and therefore reduces operational expenses. Except that just isn't true.

In the previously mentioned Gartner study, the analyst firm found that organizations actually gained dramatic simplification by adding new vendors. Where single vendor networks had substantial legacy hardware, multivendor networks tended to be made of interoperable components based on the same open standards, and agencies observed savings ranging from 40 percent to 95 percent compared to what they previously paid for Cisco's Smartnet services.[7]

Flattening and automating network architecture—a hallmark of modern networks—dramatically reduces training, maintenance, and personnel costs. One network isn't making the job easier—one vendor is making the job more difficult.

BENEFIT: Potential savings from $190 million to $520 million per year.

Potential Government Savings (in Billions)					
Technology Segment	**2012**	**Potential % Savings (Min)**	**Potential % Savings (Max)**	**Annual Potential $ Savings (Min)**	**Annual Potential $ Savings (Max)**
IT Hardware and Equipment	$2.94	20%	40%	$0.59	$1.18
IT Services: Annual Maintenance	$0.74	25%	70%	$0.19	$0.52
Communications and Network Services	$2.73	10%	20%	$0.27	$0.55
Annual Savings (Dollars)	**$6.42**			**$1.05**	**$2.24**
Annual Savings (Percentage)				**16%**	**35%**

Figure 2.
Government Fiscal Year 2012 estimated IT network spending and potential savings.

Performance

Reliance on a single network hardware vendor is also hurting network performance. By modernizing network infrastructures, agencies can get away from vendor or OEM-equivalent dependencies in favor of open, interoperable, standards-based network equipment. As a result, they can increase network agility and take advantage of a wider range of innovative tools for monitoring and managing their networks.

And by applying new network architectures, management tools, and open-standard

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7   Op. cit. Gartner

protocols, agencies require less network service. In an era where network traffic continues to accelerate, and where agency network managers often find themselves behind the growth curve, 44 percent of multivendor agencies correlate having more vendors with better network performance.[8]

BENEFIT: Potential savings between $270 million and $550 million, with the timing of savings based on network service contracts.

Virtualization

Software-defined networks that enable network virtualization will fundamentally reshape the delivery and management of network services—consolidating network hardware much in the same way that server virtualization consolidated data center hardware. Combined with the same network hardware, implementing virtualization improves capacity utilization as well as end-to-end operational provisioning, visibility, and control. That virtualization will bring vast cost savings.

As Federal IT leaders have learned over the last decade, successful virtualization depends heavily on compatible infrastructure—including network, storage, and servers. That compatibility relies on open standards. Much like legacy applications impede efforts to virtualize servers, proprietary and legacy networks will prevent successful network virtualization. As such, building networks on open industry standards today will provide vast cost savings opportunities in the future—and at no incremental cost.

BENEFIT: Using server virtualization as a model, adjusted for relative share of IT spending, network virtualization may deliver potential savings of 8.9 percent of total IT budgets.[9]

Innovation

New technologies such as Software-Defined Networking (SDN), Network Functions Virtualization (NFV), OpenStack, and sFlow reduce hardware requirements and total costs. In contrast, not only is the current proprietary network approach anti-competitive, it stifles innovation. Proprietary architectures tend to be rigid and product-centered, rather than data- and application-centered. This flies in the face of the emerging IT model characterized by cloud-based data resources and light applications running on mobile devices.

BENEFIT: SDN may reduce networking costs by as much as 50 percent or cut 7.5 percent from total IT budgets.

THE PAST IS PROLOGUE

The design and architecture of many Federal IT networks began more than two decades ago. Following industry trends and architectures, those networks were designed to support:

• Terminal and printer access to mainframes

• Shared printing and file services for PCs

• Interconnecting servers and storage in data centers

• Connecting PCs to data centers and data centers to other data centers

• Enabling remote access to data centers and applications

As a result of the gradual evolution of agency technology needs, today's Federal networks typically are:

• Complex and duplicative

• Costly to acquire as well as expensive to operate and maintain

• Lacking the bandwidth to support emerging requirements

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8   Op. cit. MeriTalk
9   Op. cit. IDC

- Rigid and laden with proprietary protocols
- Not competitive and lacking of innovation
- Insufficiently secure in the face of today's growing cyber threats
- Not capable of meeting current and future mission objectives

WHY? THE HARD TRUTH

Based upon Gartner, MeriTalk, and other industry benchmarks, Brocade estimates that only 10 to 20 percent of network budgets are actually spent on new network infrastructure solutions. In contrast, typical commercial enterprises spend 65 to 70 percent on OpEx (Steady State) and 30 to 35 percent on CapEx (DME) based on Gartner research. In other words, commercial enterprises are spending a significantly higher portion of their IT budgets on new technology than their counterparts in the federal government, which is spending an inordinate amount of capital simply to prop up rickety legacy systems.

Federal agencies are in the current state by default and not by intent. Those in support of maintaining the current wasteful and inefficient approach will counter that widespread use of the single-vendor approach allows for "standardization." Those supporting the status quo will also lean on oft-repeated phrases like "single pane of glass" and "common interface."

These are shorthand for continuing to support the same monolithic, expensive, and proprietary networks that will ultimately consume more budget and more staff hours while delivering sub-optimal results.

The time to end the current anti-competitive practice is long past. Enormous sums of money are being wasted to support an unsustainable approach.

Costs are out of control. Current networks are inefficient and not sustainable. Times are changing, but a single-vendor approach ensures only that the status quo will continue.

THE RIGHT REFORMS

Modern networks will need to utilize industry best practices to improve mission effectiveness, increase operational efficiency, and improve agency agility. Agencies must break with the past, changing from proprietary to open, from costly to efficient, and from rigid to agile.

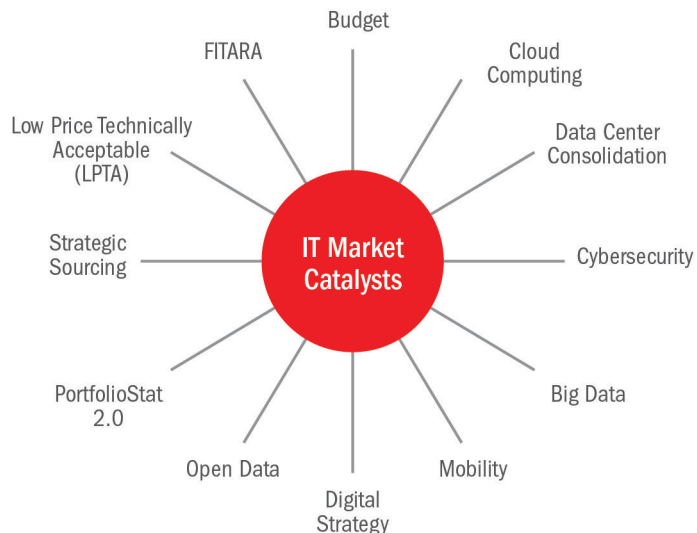**Technology and Policy Directives Shape Priorities**

Figure 3.
Technology and policy directives shape priorities.

Continuing to do business the same way would be foolish. The 2012 digital government strategy, "Building a 21st Century Platform to Better Serve the American People," emphasizes the need for more efficient networks as platforms for delivering the next generation of applications that leverage the cloud and mobility.

Transformation of the network begins with leadership. It requires action, accountability, and authority to break with the past and usher in change. It might require executive orders, policy changes, regulatory reform, and enforcement. The Federal CIO Council, under direction of U.S. Federal CIO Steven Van Roekel and the OMB, is providing agencies guidance on how to increase efficiency and reduce IT costs. For example, Roger W. Baker, Former Assistant Secretary for Information and Technology as well as CIO for the Department of Veterans Affairs, demonstrated exceptional leadership with an agency-wide mandate in a memo titled VA: Open Standard Protocols for VA Networks in August 2012.[10]

The key statements included the following:

- This memo codifies the decision to migrate from proprietary protocols to open standard protocols on VA's data networks, in order to enable participation from any vendor.
- Migrating to open standard protocols supports cost containment strategies, and will increase VA's flexibility and ability to interoperate with multiple vendors.
- Leaders in new technologies are constantly changing—improved interoperability, innovation, and open competition will enable rapid advances in network infrastructure capabilities at the lowest possible costs.

Recently, a measure to reduce waste in government IT spending by increasing the budget authority of federal CIOs and to change IT procurement was added as an amendment to the Defense Authorization Bill on June 14, 2013. The Federal IT Procurement Reform Act (FITARA), which was co-sponsored by Representatives Darrell Issa (R-Calif.) and Gerry Connolly (D-Va.) and passed by the House Oversight and Government Reform Committee in March, was added to the Defense bill on a voice vote, along with other bipartisan measures.[11]

INFRASTRUCTURE INDEPENDENCE

Agencies can do better by taking the following IT acquisition actions to save billions in IT spending:

- Adopt and mandate the use of open standards and open protocols wherever possible, restricting the use of proprietary protocols for new IT and network infrastructure investments
- Define requirements in terms of features, functions, and service levels absent of brand name requirements in requests for quotes and proposals, RFQs, and RFPs

In developing their IT requirements, agencies should envision an end state characterized by:

- Simplicity, with a flatter architecture. Greater automation of monitoring, load balancing, and provisioning reduces the need for human intervention.
- Agility, with virtualized switching and routing tables handling loads drawing on virtualized storage. Network virtualization enables more efficient use of cloud storage by making the remaining element in the IT chain highly portable.
- High visibility and manageability, using standards-based technology such as sFlow. Brocade, for example, has a 10-year history of sFlow development, resulting in a set of tools for seeing deeply into network traffic and avoiding problems before they develop into

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10   Veterans Affairs CIO Memorandum August 2012 iehrsummit.dsigroup.org/breaking-news/?goback=%2Egde_4115936_member_149976515
11   H.R. 1232, the Federal Information Technology Acquisition Reform Act (FITARA), Amendment to H.R. 1960, FY2014 NDAA) June 2013

performance bottlenecks, all tuned for virtualized environments.

- A strategic approach, rather than a product- or vendor-oriented approach. This means building large and scalable systems at lower cost, with interoperable network elements based on open standards and application programming interfaces.

The Brocade Approach: A Data-Centric Model
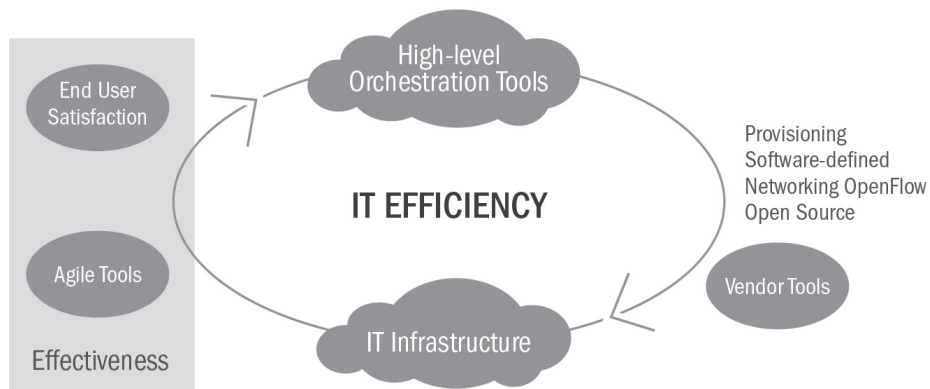### Open Systems, Software-Defined Networking, and Network Analytics

Figure 4.
The Brocade data-centric approach to open, efficient networking.

End User Satisfaction

High-level Orchestration Tools

Provisioning Software-defined Networking OpenFlow Open Source

IT EFFICIENCY

Agile Tools

Vendor Tools

Effectiveness

IT Infrastructure

With these qualities embedded in the next generation of networks, Federal agencies will have the performance they need to support new and emerging service requirements and the money they need to introduce real innovation into their processes and missions.

The use of open industry standards and multivendor networks by federal agencies will reduce costs, increase competition, promote innovation, facilitate interoperability, and provide greater overall ROI. By embracing open industry standards, the Federal government can send a powerful signal to the IT industry that it values innovation and competition.

These important reforms will also signal to taxpayers that the Federal government is serious about reducing waste. These reforms ultimately will benefit the U.S. economy by encouraging continued investment in research and development, and by placing value on intellectual property and creating IT sector jobs.

HOW FREE IS YOUR IT?
There are five simple ways to determine whether your agency is trapped in a proprietary network, paying more but getting less:

- ✓ Your agency uses "Brand X Equivalent" or "Brand X Compatible" in procurement documents rather than industry-based standards

- ✓ Your agency spends more than 60 percent of its network hardware budget on a single brand or vendor

- ✓ Your agency spends less than 20 percent of its network budget on new infrastructure and services

- ✓ Your agency spends more than 20 percent of its network budget on maintenance contracts, training requirements, and forced end-of-life updates

- ✓ Your network strategy is dependent on the product roadmap of one vendor

Looking at the 2014 budget, agencies definitely face difficult choices. Setting your network infrastructure free—and freeing up $1.05 billion to $2.24 billion per year—is not one of them.

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