

The Economic Benefit of Cloud Computing

An NJVC and Clear Government Solutions
Executive White Paper

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September 2011



NIST Definition of Cloud Computing

Cloud computing, as defined by the National Institute of Standards and Technology, is a model for enabling "... convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction." NIST is implying the economies of scale that go with cloud computing when it refers to a pool of configurable computing resources.

Cost Savings by Resource Pooling

Cloud computing is often referred to as a new technology. However, it is actually a significant shift in the business and economic models for providing and consuming information technology (IT). This shift can lead to significant cost savings. These potential cost savings can only be realized through the use of significant pooling of configurable computing resources (resource pooling). According to NIST, this resource pooling is an essential characteristic of cloud computing, allowing a cloud provider to serve multiple customers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand. Most importantly, shared aggregation of resources that can directly address consumer needs means shared (reduced individual) costs and increased individual savings.

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It may be helpful here to consider an analogous service: one's metered home utility bill. Electricity, water and gas utilities are paid for by the consumer for actual metered use. There is no requirement for the consumer to pay for the power lines or water mains, no charges are assessed for the reservoir or the personnel at the filtration plant. While there is certainly an inherent charge imbedded in the rates that amortizes these necessary items over time divided by each customer, the net charge is invisible and spread across the user community.

Cloud computing uses the same paradigm of shared needs, costs and shared resources leading to shared savings since duplicate ancillary costs (e.g., facilities, power, a/c, personnel, etc.) are greatly reduced, if not completely eliminated. Add to these obvious savings areas the virtual elimination of the capital expense associated with annual software licensing (e.g., initial license purchase, annual maintenance, individual help desk support, etc.) and the user savings become dramatic and easily justified. This is especially true in this era of increasing IT needs coupled with decreasing IT budgets. Cloud computing represents one of the few means of meeting next year's IT requirements with last year's budgetary amounts.

capital acquisition and the operations and maintenance costs of typical IT infrastructures. A 2009 Booz Allen Hamilton (BAH) study concluded that a cloud computing approach could save from 50 percent to 67 percent of the lifecycle cost for a 1,000-server deployment. A separate Deloitte study confirmed that cloud computing deployments delivered greater investment returns with a shorter payback period when compared to the traditional on-premise storage option.

Studies show that when implemented properly, the cloud computing economic model can drastically reduce the operations and maintenance cost of IT infrastructures.

Cloud Computing for the Intelligence Community

In considering cloud computing for the Intelligence Community, suitability with respect to physical and logical security is an obvious issue. Given the legal and operational concerns, classified information should always be processed in properly protected and certified IC private or community clouds. If an appropriate economic model can be designed addressing the critical factors described above, economic savings that are proven in the private sector can certainly be realized in the IC.

Additionally, when used to process unclassified information, sharing cloud computing resources can nominally provide the operational advantages of a private cloud with a cost closer to that of a public cloud due to the expected economies of scale from multi-tenancy.

Federal Community Cloud Economic Model

The federal government is currently deploying a federal community cloud. Officially referred to as the General Services Administration Infrastructure as a Service Blanket Purchase Agreement (GSA IaaS BPA; item #4 in the White House CIO's "25 Point Implementation Plan to Reform Federal Information Technology Management"), this Government Wide Acquisition Contract (GWAC) vehicle is designed to implement a community cloud economic model to support the federal government. The Office of Management and Budget (OMB) expects this community to provide approximately \$20 billion in cloud computing services to a community made up of more than 25 agencies.

Using the BAH study as a guide, and assuming that community cloud economies mimic those expected from a hybrid cloud, transitioning IT services from an agency-owned IT infrastructure to the GSA IaaS platform should deliver benefit cost ratios of approximately 7:1.

Proper deployment of cloud computing is dependent upon timely agency acceptance and compliance with the OMB “Cloud First” mandate. This is because the savings depend upon achieving the needed economies of scale attained through resource pooling. If each agency “does its own thing,” we have not differed significantly from the current situation of each agency acquiring an individual solution for its IT needs. They may call it a private cloud, but the fact is this is just another name for the acquisition of standalone IT resources—not shared resource pooling. As such, it is important that the mandate be enforced in fact and in spirit as well as in name (private cloud).

There are means to accomplish this through the existing GWAC vehicles rather than multiple contracting activities (e.g., RFIs, RFPs, multiple separate GWACs, etc.) that encourage early adoption, and most importantly, aggregation of pooled resources that provide the economy of scale model for cost savings. The most applicable GWAC for cloud computing is the GSA IaaS BPA. If made “mandatory use,” use of this vehicle would go a long way towards achieving the needed scale.

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A potential impediment to mandatory use is the Economy Act which the BPA (and the GSA Schedule) is exempt. Only Congress can apply the Economy Act to the GSA Schedule based on the IaaS BPA. Doing so would prevent individual agencies from setting up myriad time and resource consuming separate contract vehicles rather than using the existing contract vehicle called for in the 25 Point Plan. It should be noted that the 25 Point Plan specifically calls for working more closely with Congress to achieve its reform goals.

In summary, cloud computing provides several strong benefits and economic incentives. Selecting a public, private, hybrid or community cloud implementation will depend on an agency’s applications, performance needs, security and compliance requirements. With the proper deployment, cloud computing can provide significant savings, better IT services, and a higher level of reliability.

Benefits and Economic Incentives of Cloud Computing

- **Lower Costs.** Since cloud computing pools computing resources that can be distributed to applications as needed, thus optimizing the use of the sum of these resources, it delivers better efficiency and improved utilization of the entire shared infrastructure. This also leads to lower costs for power and facilities due to the smaller footprint.
- **Capital Expense-Free Computing.** A public cloud delivers a better cash flow by eliminating the capital expense associated with building and updating the server infrastructure.

- **Deploy Projects Faster and Foster Innovation.** Because servers can be brought up and repurposed in a matter of minutes, the time needed to deploy a new application drops dramatically with cloud computing. Rather than installing and networking a new hardware server, it can be dialed up and imaged in through a self-serve control console. Or better yet, with a private cloud, a service provider can dial up a new server with a single call or support ticket. This mechanism also fosters innovation by providing the ability to try new configurations quickly and easily without having to wait and pay for each new one.
- **Scale as Needed.** As applications grow, customers can add storage, RAM and CPU capacity as needed—you can buy just enough and scale as application demands grow. In the end, the consumer is only paying for what it uses and the level of service it needs (similar to phone service).
- **Lower Maintenance Costs.** Because cloud computing uses less physical resources, there is less hardware to power and maintain. With an outsourced cloud, you also don't need to keep server, storage, network and virtualization experts on staff full time—saving money.
- **Resiliency and Redundancy.** Customers can get automatic failover between hardware platforms and disaster recovery services to bring up a server set in a data center if the primary data center experiences an outage.

About the Authors

(<http://blogs.forbes.com/kevinjackson>), a *Forbes* magazine online blog dedicated to public sector cloud computing. He is also founder and editor of “Government Cloud Computing on Ulitzer” electronic magazine (<http://govcloud.ulitzer.com>). His first book, *GovCloud: Cloud Computing for the Business of Government* was released in spring 2011. Mr. Jackson has been deeply involved in the broad collaborative effort between industry and the U.S. National Institute of Standards and Technology on the federal government’s adoption of cloud computing technologies. He is the Network Centric Operations Industry Consortium’s Cloud Computing Working Group Chairman.

Robert Williams is President of Clear Government Solutions. His professional career spans more than 40 years of military, commercial and government service in the intelligence, information technology and security communities. Initially drafted during the Viet Nam conflict, he attended Infantry Officer Candidate School with the Army Security Agency. Mr. Williams’ subsequent military duties included assignment as an Intelligence Analyst at the National Security Agency. Upon separation from active duty, he became Project Manager for Morrison-Knudsen Saudi Arabia Consortium. Mr. Williams was responsible for construction of the King Khalid Military City in Saudi Arabia and recruited a team of more the 110,000 for the project. An extended period of commercial employment by major U.S. corporations followed, including McDonnell Douglas, Computer Associates, Digital Equipment Corporation and Data General. Mr. Williams then worked for small and disadvantaged businesses, successfully winning more than \$150 million in new business over three years. Later, he accepted the position of President with A&T Systems, where under his leadership, the company grew significantly—winning more than \$30 billion in new contract value and hundreds of millions of dollars in actual task and delivery orders over eight years.

About NJVC

NJVC is one of the largest information technology solutions providers supporting the DoD. The company provides quality IT solutions and services to the federal government and specializes in supporting intelligence, defense and geospatial organizations. NJVC has more than 1,300 employees and operates in primary company offices in Vienna, VA; Arnold, MO; and O’Fallon, IL, and at client sites. NJVC also provides distributed technical services to the DoD and the U.S. Intelligence Community around the globe. For more information, visit www.njvc.com.

About Clear Government Solutions

Clear Government Solutions, Inc. is a privately held corporation founded in 2006. Incorporated in the State of Delaware, and headquartered in Prince George’s County, MD, CGS is a full-service, high-technology engineering design and systems Integration firm. The firm principally serves federal, state and local government clients. CGS holds three GSA MAS Schedules: 65VA, 70 and 84. CGS provides a full range of physical and logical security solutions, including identity management, HSPD-12 products and services, access control systems, video surveillance, electronic security

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