Nothing Compares
NORTH CAROLINA

Study State Agency Use of Utility-Based Computing

H97, Session Law 2015-241, Section 7.26.(a).

April 2016

Department of Information Technology
Keith Werner, State Chief Information Officer

Legislative Mandate

Session Law 2015-241: STUDY STATE AGENCY USE OF UTILITY-BASED COMPUTING

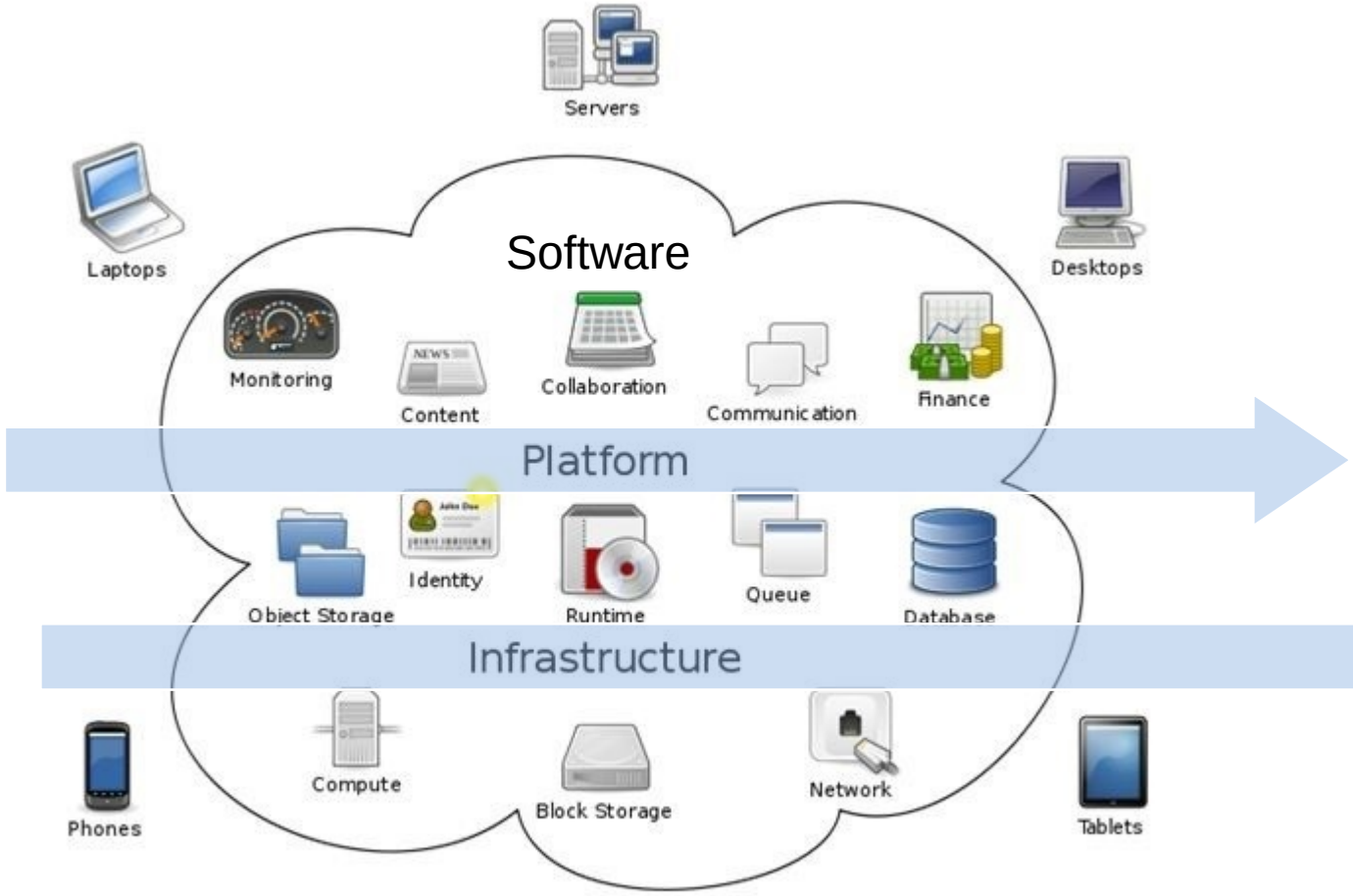
SECTION 7.26.(a) The Department of Information Technology (Department) shall study the use of and cost savings associated with the adoption of utility-based cloud computing services by State agencies. For the purposes of this section, "utility-based computing" means the process of providing computing service through an on-demand, pay-per-use billing method, metering the offered services. At a minimum, the review conducted by the Department shall:

1) Evaluate the actual and **potential usefulness** of commercial cloud computing services by State agencies and whether expedited transition to cloud computing would offer significant savings to State agencies.
2) Evaluate how giving State agencies the ability to purchase information technology (IT) services in a utility-based model would result in **savings** from paying for only the IT services consumed.
3) Identify the **capabilities required** to implement utility-based computing, storage, and applications, including a rate structure.
4) Include a **request for information** to determine the capabilities and costs of available services.

SECTION 7.26.(b) On or before April 1, 2016, the State Chief Information Officer shall make a written report to the Joint Legislative Oversight Committee on Information Technology on the results of the Department review of utility-based computing.

Cloud Computing

In general, cloud computing abstracts services at all layers (Infrastructure, Platform, and Software) to provide information technology as a service.



Utility-based computing seeks to maximize the efficient use of resources. It is most commonly leveraged in platform and infrastructure as a service.

Utility-Based Cloud Computing

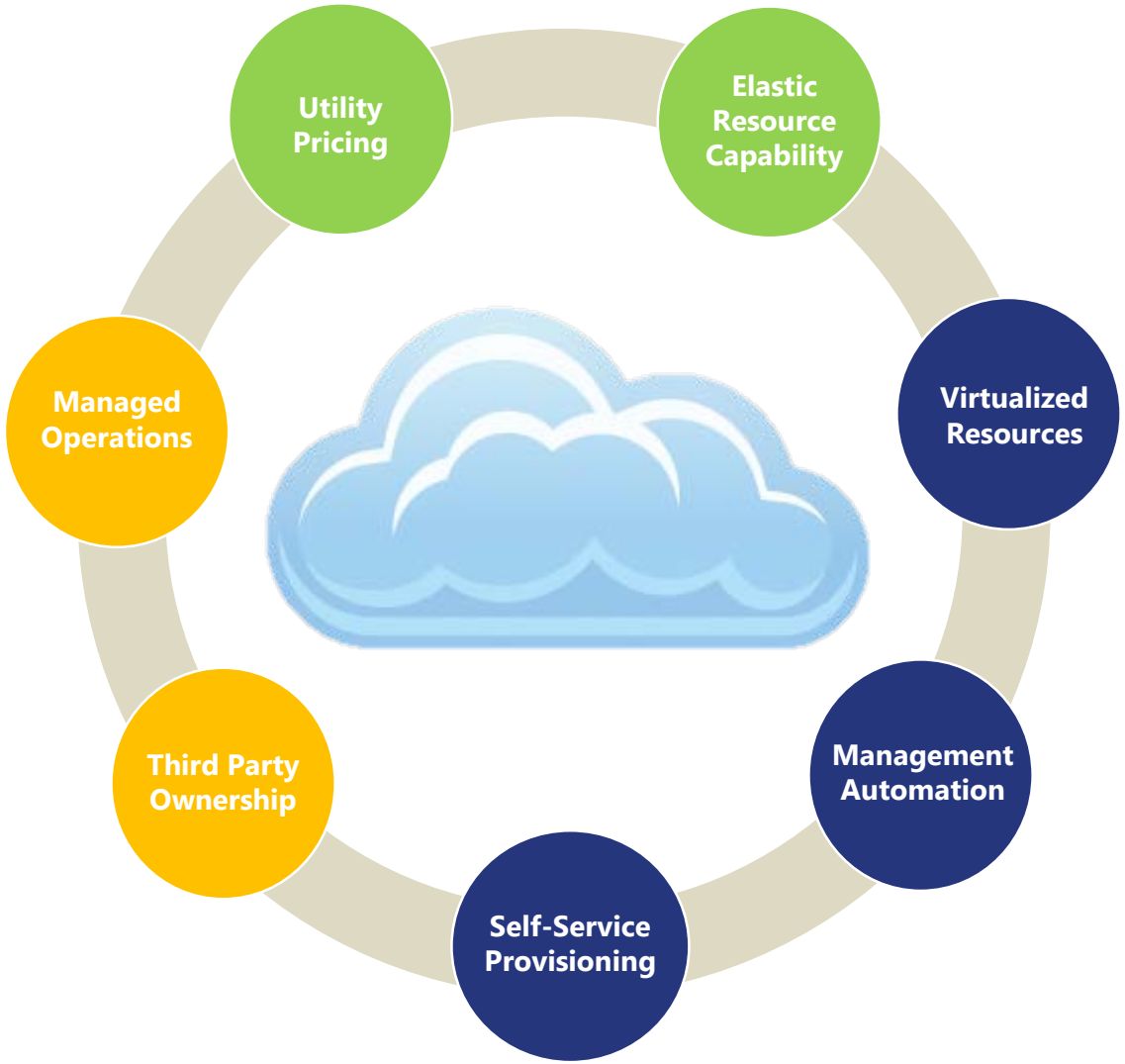
Utility-based cloud computing is a model for enabling convenient, on-demand access to a shared pool of configurable computing resources.

Value propositions

Economic:
- Pay as you go
- Pay as you grow
- Economies of scale
- No capital expenditure

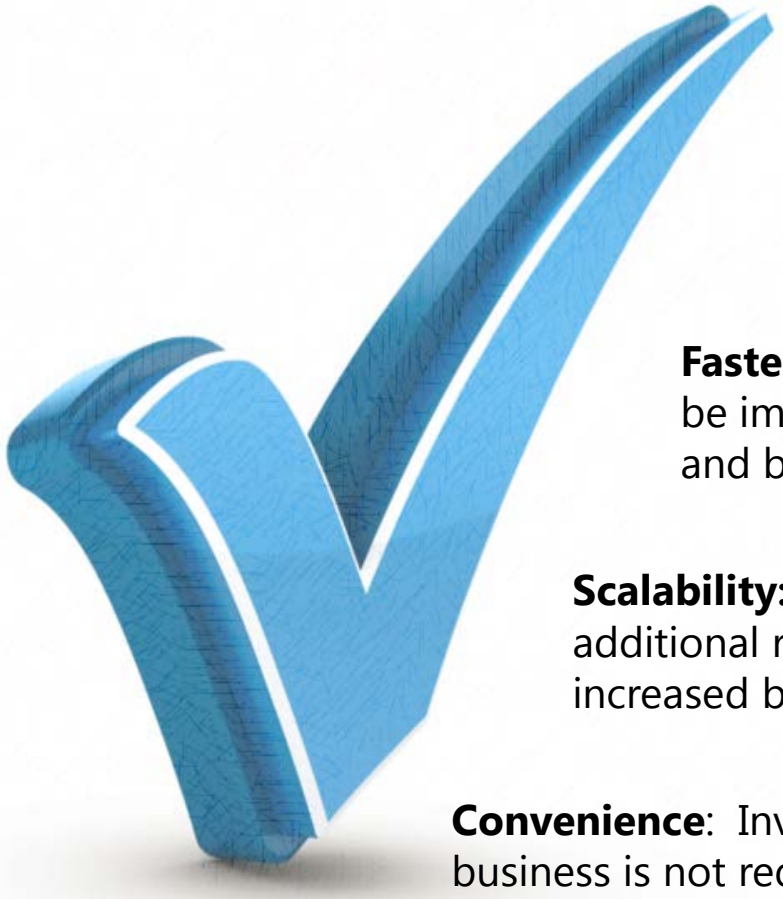
Operational:
- Common, abstract environments for development
- Reduction in IT asset ownership

Strategic:
- Focus on core business, consuming commoditized services from the industry



Concept: MWD Advisors, www.mwdadvisors.com

Benefits



Flexibility: Differing departmental or inter-departmental needs may require different software or different infrastructure for varying periods of time. Utility computing provides the ability to handle variances in demand and system loads.

Faster Delivery: Third-party providers have existing infrastructure that can be immediately provisioned, allowing for quicker delivery of State project and business services.

Scalability: Due to the fact that utility service providers can quickly add additional resources, the hurdles of scaling up for additional users or increased bandwidth are easily overcome.

Convenience: Investment in the hardware, software, and licenses needed to carry out business is not required. A third party provides the services, maintenance, and administration.

Industry Analysis, Market Research, and Data

Based on industry analysis, market research, and data from the National Institute of Standards and Technology (NIST):

- The State would benefit from the addition of a utility-based computing services model.
- DIT provision of a utility-based cloud computing service should increase efficiency and result in cost savings over time.
- Further savings should occur if the State transitioned to a broker model, where DIT manages both the contracts with and use of third party vendors, helping agencies determine the most cost-effective solution for their needs.

Success Factors

It is the SCIO's goal to leverage utility-based cloud computing to enable the State to get the right solutions, from the right vendors, for the right business problems. To accomplish this, we must:

- Invest in staff development and training
- Define billing, asset management, procurement, data security, and liability for the new service offerings
- Determine the State's role(s) in cloud computing engagements
    - NIST identifies the following five roles in a cloud computing model:

Consumer:	person/organization with a business relationship to a Provider
Provider:	person/organization responsible for making services available to interested parties
Auditor:	party that conducts independent assessment of cloud services, operations, performance, security
Broker:	manages use, performance, delivery of cloud services; negotiates relationships between Providers and Consumers
Carrier:	intermediary that provides connectivity of cloud services from Providers to Consumers

Prior to the implementation of a utility-based cloud computing strategy, the State should ensure that the contracting terms and conditions with vendor partners adequately address:

- Defined vendor service levels
- Ability to migrate data from one vendor to another with ease
- Data confidentiality and auditability

Source: National Institute of Standards and Technology (NIST), Cloud Computing Reference Architecture

Request for Information

The SCIO issued a Request for Information (RFI) to collect information from vendors regarding utility-based computing and cloud computing service models available to government entities.

Information requested included:

1. Government technology program experience
2. Usefulness
3. Potential savings
4. Capabilities

The RFI review team will include agency representatives.

Examples of Current Engagements

The following are some examples of where the State is using or considering using a utility-based cloud computing offering.

- **Remedy in the Cloud**
- **NC.GOV Websites** (using Amazon Web Services)
- **Microsoft Office 365**
- **NC State Board of Elections Website** (using Amazon Web Services, Google Analytics, Microsoft Azure)
- **Cisco: Security Monitoring**
- **Software Quality Assurance (SQA)**
- **Project TouchDown** (using Microsoft Azure)
- **Network Simplification Program** (Next Generation data center networks, enabler for State utility-based cloud computing model)
- **Evaluating cloud hosting and storage options** (introduced to Agency CIOs)

Path Forward

Phase 1	Phase 2	Phase 3	Phase 4
Analysis	**Planning**	**Execution**	**Operations**
✓ Conduct holistic needs assessment ✓ Convene state agencies to discuss needs ✓ Analyze and conduct market research of cloud storage offerings ✓ Analyze and market research of cloud hosting offerings ✓ Draft and post RFI	• Review RFI responses • Develop strategy for cloud service offerings • Enhance data centers to support future cloud workloads • Analyze existing procurement avenues to support cloud services • Explore new or needed procurements options • Proof of concept for utility-based computing hosting and storage options	• Award vendor contracts • Establish DIT services, service models, and rates	• Deliver services for consumption with emphasis on cost savings, vendor management, and contract management • Continuously evaluate emerging technologies

✓ Complete