



Cloud Computing

Efficient service delivery via the Internet

Cloud computing is an emerging form of delivering information technology (IT) services via the Internet instead of through an organization's own technology infrastructure. In a time of funding challenges, government organizations are investigating cloud computing solutions as a way to obtain IT capabilities that are flexible, lower cost, and are quick to implement.

As an operational expense, cloud computing provides the same access to IT resources—such as email, databases, servers, storage, application software, development tools, and desktop services—as solutions that are procured and maintained on premises. Further, cloud computing reduces the need for organizations to incur capital expenses associated with the procurement, implementation, and maintenance of those resources.

While the concept of cloud computing is still relatively new in state government, the service delivery model dates back to the advent of mainframe computing. Instead of buying or leasing equipment and hardware for payroll and billing, organizations shared computing resources on an as-needed basis to save on costs.

Deployment Models

- **Public Cloud** – The cloud provider delivers a common IT capability in a shared environment. Data from multiple customers with similar requirements are pooled together to optimize resources.
- **Private Cloud** – The cloud provider dedicates and customizes the capabilities, re-

sources, and administration of a defined environment to each organization.

- **Hybrid Cloud** – The hybrid cloud is a blended model with both private and public cloud features.

Advantages

- **Reduced Cost** – Agencies can scale back or eliminate expenses and effort related to ongoing IT maintenance, support, and other operations.
- **Instant, On-Demand Services** – Agencies can set up cloud computing services instantly, avoiding long procurement cycles.
- **Pay As You Go** – Agencies pay only for what they use.
- **Rapid Scalability** – Agencies can rapidly increase capacity during peak usage spikes then scale down after peak periods end.
- **Improved Administration** – Agencies can reduce time spent on routine administrative tasks, such as configuration management, manual troubleshooting, software updates, or backups.
- **More Options** – Agencies can customize their solution through an increasing number of service providers, gaining performance and price advantages.
- **Enhanced Reliability** – Agencies can provision disaster recovery and business continuity services.

- **Improved Funding Model** – Agencies can significantly reduce capital expenditures for IT hardware and software and shift to an operating expenditure arrangement.

Considerations

While the benefits are substantial, certain concerns exist when an agency no longer has direct control over its business assets (applications) or infrastructure assets (servers). Some of the concerns surrounding the use of cloud-based resources include

- security, as physical location of hardware and software may be unknown;
- availability of the Internet, which impacts reliability;
- managing various service levels, remedies, and terms of use;
- increased vigilance needed to audit or assess cloud computing providers.

Statewide Approach

The *2012–2016 State Strategic Plan for Information Resources Management* (the Plan) identifies cloud computing as one of the state's technology priorities. The purpose of the Plan is to provide a strategic IT roadmap for the next five years. Agencies will report how they will align with the Plan in their agency strategic plans. The Plan recommends that state agencies evaluate their current computing environments for potential opportunities for moving into the cloud.

DIR Initiatives

DIR's data center services (DCS) customers are exploring cloud services. In September 2011, DIR established a twelve-month pilot project with three of its customers to gain a greater understanding of, and experience with, cloud offerings for state government. Pilot agencies can customize a solution from a variety of pre-approved cloud service providers through a central self-service web portal. DIR will institutionalize the knowledge gained from the project to inform and advance future shared cloud service implementations across the state.

Additionally, in July 2012, all DCS customers will have an opportunity to select a dedicated cloud solution as one of many new data center services options.