

Legislative Science and Technology Note

Cloud Services and Government in West Virginia

May 2024

“The cloud” [refers to](#) computing and data storage services accessed over the internet and managed by a third party. This Science and Technology Note discusses the opportunities and challenges associated with the West Virginia government’s adoption of cloud-based information technologies.

West Virginia’s Information Technology: Opportunities and Challenges

A 2022 [mainframe failure disrupted](#) West Virginians’ access to online government resources like [health services](#) and [risked](#) the state’s ability to perform basic functions like revenue collection. Following this disruption, the state decommissioned its mainframe and [transferred its functions](#) to a privately managed [hosted mainframe services](#) solution (see [private cloud](#)). This event accelerated efforts to modernize the state’s information technology (IT) infrastructure, encouraging the use of cloud services, such as those in the figure below.

Cloud services [outsource management](#) of IT [infrastructure](#) (servers, networks, software) to a private company. Potential benefits to adopting cloud services include enhanced security, reliability, and flexibility. These benefits, however, [depend heavily](#) on the application in question and the structure of the service contract. It is important to understand the project needs, type of [services offered](#), different [subscription models](#), and [contract subtleties](#).

Worldwide Market Share of Leading Cloud Infrastructure Service Providers in Q4 2023*



*Includes platform as a service (PaaS) and infrastructure as a service (IaaS) as well as hosted private cloud services

Source: WVU Bridge Initiative, adapted from [Richter, Felix. Statista, 5 Feb 2024](#)

Research Highlights

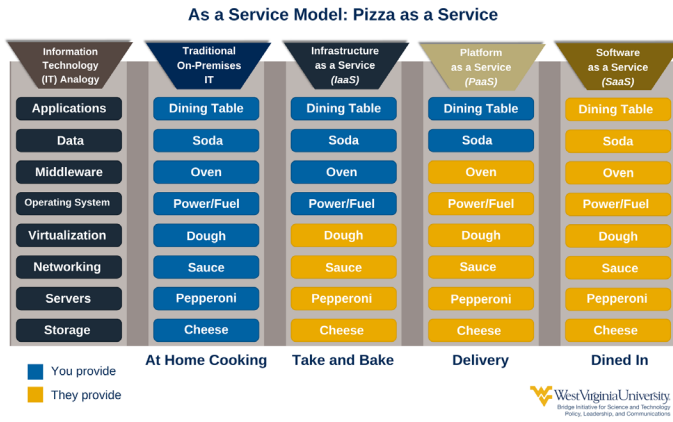
- West Virginia is currently adopting cloud services across the government in a technology infrastructure modernization effort.
- While cloud computing has the potential to help deliver efficient and reliable information technology service to West Virginians, cloud services may not make sense for every application and can sometimes add costs and complexity. It is important to clarify specific agency and application needs and understand the available services (including possible advantages and pitfalls) before entering into contracts with cloud service providers.
- Policy options for West Virginia include IT program and cost assessments and workforce training initiatives.

Accessing [cloud services](#) involves entering contractual agreements with [cloud service providers](#) (CSPs). CSPs typically [offer software, platform, or infrastructure “as a service”](#) (see “Pizza as a Service” figure below). Cloud services can be [private](#) (infrastructure dedicated to one client), [public](#) (shared infrastructure), or a combination of the two ([hybrid](#)). Most state Chief Information Officers ([89%](#)) want a hybrid cloud for their state IT.

Outsourcing IT functions to the cloud could be [advantageous](#) for applications that need flexibility, like a tax agency which sees yearly spikes in traffic. [Major CSPs](#) (Amazon, Microsoft and Google) invest heavily in security, redundancy, and [high reliability \(or availability\)](#), important for critical government data and applications.

However, cloud service contracts can be complicated, expensive, and [restrictive](#), and all the state’s leverage is up-front. Simply migrating existing government IT services and legacy applications to the cloud [could raise costs with no benefits](#) and lead to [vendor lock-in](#). [Software licensing](#) and [data compliance](#) issues [can add](#) unexpected costs. A 2024 survey of 350 IT leaders [found](#) that 93% of respondents had been involved in a cloud repatriation project in the last three years, moving applications back from the cloud.

Pizza as a Service



Source: WVU Bridge Initiative, adapted from [Albert Baron, 2014](#)

Current West Virginia Cloud Services Policy

Passed in 2023, [SB 734](#) required the state Chief Information Officer (CIO) to implement a comprehensive state cloud services strategy. This bill also required agency cyber risk assessments, and an annual report on security and modernization efforts from the CIO. In 2024, the legislature passed a bill ([HB 5604](#), [vetoed](#) by the Governor) which would have removed the [CIO approval requirement for government IT purchases](#) and allowed [spending units](#) to make IT purchases less than \$250,000 (up from \$50,000) without going through the [Purchasing Division](#). In his veto message, Governor Justice [said](#) that state agencies may not always have the IT expertise to make the best decision for the state and the taxpayers.

Cloud Workforce Benefits and Challenges for West Virginia

While decisions on cloud services in the West Virginia government require careful case-by-case consideration, cloud services could simplify some processes, freeing up state IT professionals to [focus more](#) on the needs of West Virginians. New IT applications designed in the cloud [could be](#) more easily accessible and scalable. Coordinating cloud service contracts could [simplify information sharing](#) between or across agencies. Agencies could obtain new [insights from data analysis](#) performed using cloud-enabled tools. As the West Virginia government [considers](#) opportunities for artificial intelligence (AI) in government, understanding cloud services will likely be vital, as [most AI applications run on the cloud](#).

Modernizing the state's technical infrastructure involves a two-way workforce [upskilling challenge](#). Older IT professionals [may be more familiar](#) with [legacy systems and hardware](#), while younger employees [may be more familiar](#) with cloud-based systems and software. Hardware expertise [remains important](#) in a hybrid cloud state. Of those surveyed, [88%](#) of state CIOs identified training and skills gaps as the biggest cloud workforce concerns.

Comparison to Other States

Approaches to state IT organization, procurement and modernization are varied. Some states (including [Georgia](#), [Mississippi](#), and [Texas](#)) have a CIO for each agency. Georgia has the central [Georgia Technology Authority \(GTA\)](#), which [offers](#) "enterprise-level cloud solutions to state agencies" and gets volume-purchasing IT discounts.

A [2023 survey](#) of state CIOs found nearly two-thirds had been directed towards state cloud adoption by legislation, and 49% of states surveyed had "implemented new financial management processes to effectively manage the variable... nature of cost associated with cloud services." Additionally, [58% reported](#) having an up-to-date statewide inventory of applications, and 33% reported having an up-to-date statewide assessment of legacy applications, [which are](#) harder to maintain and keep secure.

Policy Options for West Virginia

A policy option that could be considered is to mandate an accounting of all state information technology applications, [as done in Virginia](#). This assessment of current IT functions and costs would aid in evaluating where cloud services could most benefit the state. In addition, the legislature could commission a legacy application assessment, [as Texas did](#) in 2014. To address workforce skills gaps, the state could [expand participation](#) in public-private workforce initiatives like the [AWS Skills to Jobs Tech Alliance](#).

This Science & Technology Legislative Note was written by Ryan Nesselrodt, PhD, West Virginia Science & Technology Policy Fellow on behalf of West Virginia University's Bridge Initiative for Science and Technology Policy, Leadership, and Communications. The Bridge Initiative provides nonpartisan research information to members of the West Virginia Legislature upon request. This Science and Technology Legislative Note is intended for informational purposes and does not indicate support or opposition to a particular bill or policy approach. Please see <https://scitechpolicy.wvu.edu/> or contact scitechpolicy@mail.wvu.edu for more information.