How State and Local Governments Can Modernize Data Management
Digital information forms the backbone of state and local government. Data drives the mission: enhancing efficiency, elevating operations, and delivering improved citizen services.

SLED entities can be doing even more. They can “treat data as a public asset that can be used to explore and discover patterns, correlations and insights to improve efficiency and solve problems,” according to the National Conference of State Legislatures.

Yet many state and local agencies are struggling to store, manage, and analyze an ever-increasing influx of data in support of everything from health care to transportation to education, and beyond.

Some have taken steps to modernize their data management but have been met with hurdles along the way. “Short term solutions like Robotic Process Automation can be applied to speed up the people challenge — how we make fingers move faster — but they don’t really address the real challenge of moving to next-generation processes,” said Bob Burwell, chief technical officer for U.S. Public Sector State, Local Government, Education and Healthcare (SLED-H) at NetApp.

As state and local governments look to optimize and standardize their data use, they can turn to trusted industry partners to help build an efficient and effective “data fabric,” an architecture and set of data services that provides consistent capabilities across hybrid multi-cloud environments.

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This paper highlights key data management challenges agencies face, and describes how they can leverage a cohesive, integrated data fabric to seamlessly and securely connect different data management environments across disparate clouds.

**The Data Management Landscape**

Recent years have seen data rise to the forefront of concern in the SLED environment. The experience of citizens, beneficiaries, and government workers is evolving “as data becomes pervasive and more seamlessly integrated within decision-making processes,” according to The Data Foundation, a non-profit think tank that encourages the use of data to inform public policymaking.

Yet many struggle to make the most of the data on hand, in part because of the complexity of the technology infrastructure, where data sources and data stores may exist in disparate systems — sometimes connected, sometimes siloed off from one another.

“Most are still trying to get their arms around their infrastructure to truly understand their path forward,” Burwell said. “Legacy operations have a big impact on making changes: A lot of what SLED agencies do is interwoven with each other and have evolved over years. Trying to unwind these relationships makes things challenging.”

The COVID-19 pandemic has also had a big impact on the SLED approach to data management. On the one hand, a rise in work-from-home situations and the explosion of Software as a Service in SLED has changed the way the data center is viewed, with nearly all SLED entities now leveraging hybrid cloud and moving from CAPEX to OPEX spending models.

At the same time, states have seen an influx in funding in support of modernization efforts, for good and for bad.

Burwell points for example of the State of Wyoming. “Last year as COVID-19 was surging they were looking at ways to analyze the COVID testing data to help their citizens — which is a great thing,” he said. “Leadership stood up a group to crunch data and build applications, which is also good. They were using the power of the cloud to help expedite the process. This was exactly how the cloud was designed to be used.”

Unfortunately, and unbeknownst to IT, an individual on the team publicly posted citizens’ personal information (names, addresses, dates of birth), leading to high-level resignations. The key point? While SLED is advancing in its use of data, “the data management, the governance, the policy piece of this new hybrid model still needs a lot of work,” Burwell said.
State & Local Challenges

For many in SLED organizations, the shift to a data-centric mode of operations can come with a range of challenges:

- **Compute and storage:** Many SLED entities have limited visibility into their current infrastructure and have no clear hybrid multi-cloud strategy. An understanding of the compute and storage requirements for a given application or data set is needed in order to achieve improved performance, cost, and agility, yet IT leaders may find this difficult to achieve.

- **Governance exposure:** For state and local agencies, “placing personal information, HIPAA data, and other sensitive information in the open is a public relations nightmare — and one that can be avoided,” Burwell said. To move forward safely, SLED entities need to understand their data-governance exposure, and yet they may lack the tools needed to identify gaps in real time.

- **Failure to modernize:** In many cases, SLED agencies “aren’t embracing next generation technologies,” Burwell said. “Object Storage, Cold-Data tiering, storage efficiencies, and a unified data management tool should be a part of every conversation.” Agencies should be looking to simplify the burden of management in a hybrid or multi-cloud environment, yet many are not yet leveraging these modernized tools.

A “Data Fabric” Approach

SLED leaders need a way to maximize their use of data. They need to recognize “the role of data and information management for sustained access to government services, informed decision-making, implementing innovative IT solutions and improving the delivery of government services to citizens,” according to NASCIO, the National Association of State Chief Information Officers.

By addressing their data strategies, “SLED organizations have the opportunity to not just predict the future, but to forge it themselves,” said Matthew Lawson, Director of Solutions Engineering for State and Local Government and Education (SLED) at NetApp.

They can do so by leveraging a “data fabric” approach.

“I think of data fabric as a mesh that all of my data center operations live on. Whether it is my on-premises data center, my cloud data center, or my edge devices — they all make up my data fabric, or data estate,” Burwell said. “A data fabric is a powerful architecture that standardizes data management practices and practicalities across these environments. It affords data visibility and insights, data access and control, data protection, and enhanced security.”

A data fabric architecture “leverages both human and machine capabilities to access data in place or support its consolidation where appropriate,” Gartner reports. “It continuously identifies and connects data from disparate applications to discover unique, business-relevant relationships between the available data points.”

When implemented correctly, data fabric offers an incredibly potent tool. “The agility of being able to place data and applications where they are the most effective is very powerful,” Burwell said. “And tools exist to help government agencies truly reap the benefits.”

Take for example issues around ransomware, a top concern in the SLED environment these days. “Ransomware doesn’t succeed if you can prevent it from accessing data, or more quickly recover lost data” in the event of a successful attack, Burwell said. With a data fabric in place, agencies can monitor data in real time, and compare changes to a known baseline.

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With this approach, “a real-time ransomware engine monitors peculiar access patterns,” he said. “Once we see those patterns we take Snapshots, lock those Snapshots, and alert management — giving IT the ability to react in real time to potential cyber incidents. And this happens across the data fabric, from edge to core to cloud.”

**A Potent Tool Toward Greater Agility**

A data fabric approach empowers SLED agencies as they continue their evolution toward the cloud. With standardized data management and a unified data landscape, agencies will be able to move seamlessly between data centers, hyperscalers, and edge devices.

In addition, “automation will help streamline placement and protection of data, while reducing costs in real-time,” Burwell said. Supported by a data fabric, “backup and archive will evolve, with real-time AI being used to predict trends.”

All this in turn will help SLED agencies meet their missions more effectively. “Applications don’t work without data,” Burwell said, and a data fabric ensures IT leaders and other stakeholders will have the access and insight they need to make the most of the data on hand.

**Going Forward**

Agencies continue to evolve from virtual machines to containers, and data requirements continue to evolve as well, with new compliance requirements and emerging calls for enhanced inter-agency data sharing.

In this emerging ecosystem, “being able to take advantage of the wealth of information we have locked in our current datasets will become more important,” Burwell said. “We need to become more structured in how we place our data, how we monitor that placement, and how to mitigate risk.”

A data fabric architecture ensures agencies can meet that challenge. It provides consistent capabilities, standardizing data management practices across cloud, on premises, and edge devices.

**How NetApp Helps**

NetApp BlueXP lets state and local agencies build and operate an efficient, resilient, secure, and performant hybrid multi-cloud data estate through a single control plane, with the ability to discover, deploy and operate storage on AWS, Azure, Google Cloud and on-premises.

It allows an agency to operate the entire data estate systematically, across on-premises and multiple clouds, with enterprise-grade protection, security, and governance for all data, no matter where it resides.

BlueXP supports agencies as they seek to operationalize their data in support of mission outcomes, with tools to address ransomware, support governance, and ensure disaster recovery and replication, as well as the ability to make use of next-generation technologies such as Kubernetes, Containers and Artificial Intelligence.

NetApp’s Cloud Design Workshop can help an agency to understand its compute and storage requirements in the cloud, while BlueXP and NetApp Data Sense help to identify potential gaps in governance.

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Learn more about how NetApp can help your agency adopt an effective data fabric solution.