DEPARTMENT OF ADMINISTRATIVE SERVICES

BUREAU OF ENTERPRISE SYSTEMS AND TECHNOLOGY

55 Farmington Avenue, Hartford, CT 06105

Springfield Data Center

Category	Disaster Recovery / Business Continuity
State	Connecticut
Contact	Mark Raymond, Chief Information Officer mark.raymond@ct.gov
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Executive Summary

The State of Connecticut survived several disasters over the prior 5 years. Hurricanes, blizzards, October snowstorms all left large numbers of residents of the state without power for as much as 10 days. The primary data center and state network survived these events without incident. However, the frequency of natural disasters experienced in the state, combined with increasing reliance on technology, demanded a robust, nimble and cost efficient disaster recovery solution. As such, the State of Connecticut's "cold" disaster recovery capability was insufficient for the needs of the customers. The State could not afford to establish its own DR capability. Three options were considered and it was decided to partner with Commonwealth of Massachusetts as its new Springfield Data Center was readily available, highly secure and had attractive lease rates. Consequently, the Springfield Data Center is now providing warm and hot disaster recovery resiliency, with RTOs of hours and RPOs of minutes rather than days, and at an annual savings of $50,000 over the previous, less capable solution.

CONCEPT:

The State of Connecticut survived several disasters over the prior 5 years. Hurricanes, blizzards, October snowstorms all left large numbers of residents of the state without power for as much as 10 days. The primary data center and state network survived these events without incident. However, the frequency of natural disasters experienced in the state, combined with increasing reliance on technology required a faster, more robust, and cost efficient disaster recovery solution.

The State also recognized an ever increasing reliance on 24x7 government services. From public safety to social services, citizens and first responders needed immediate recover and a more robust disaster recovery solution. The State's disaster recovery capability had been provided by an outsourced "cold" Disaster Recovery facility with several limitations that were no longer tolerable:

- a 72-hour minimum recovery time for infrastructure, with critical applications taking even longer;
- a limited ability to stay in the center in the event of a disaster;
- the State needed to be one of the first to declare a disaster within the geographic area or would were not guaranteed space in the data center.

Connecticut needed a more robust, reliable, cost-efficient capability.

Three options were considered:
1. Build a state owned and controlled facility
2. Lease space in a co-location facility
3. Partner with the Commonwealth of Massachusetts to share space within the new Springfield Data Center

The State could not afford to build its own facility; it did not have enough money and time to build a primary data center. That option was dismissed. The State investigated several co-location options, however the security requirements for housing criminal justice, tax, human services and other protected data raised the costs for auditing and environmental security beyond that which the state was willing to bear.

While pursuing an intergovernmental agreement is not for the faint of heart, the State determined that the benefits of sharing a space specifically designed for the public sector was worth the effort.

SIGNIFICANCE:

The Commonwealth of Massachusetts opened the Springfield Data Center (SDC) in 2013 to serve as a second data center for the computing needs of the Commonwealth. This data center had 20,000 square feet of available data center floor with another 20,000 square feet available for expansion. The SDC was built with the concept that it would serve multiple public sector agencies; however, leadership was seeing limited demand for the service.

At the same time, Connecticut had a need for precisely this kind of space. The benefits of this arrangement were obvious:

- Both states held data from common federal partners, premise security audits by CMS, IRS and SSA could be done once and could be used for both organizations
- Payments from Connecticut for using the DR space could offset operating costs for the Commonwealth
- Connecticut had a fiber optic network that already extended to Springfield to serve the Connecticut Education Network

Both Massachusetts and Connecticut decided to pursue a partnership agreement where the Commonwealth of Massachusetts would lease space in their newer Springfield Data Center to house "hot" and "warm" recovery capabilities. The Springfield Data Center operates in a highly secure, reliable and cost-effective environment, built to Tier III specs with an efficient PUE of 1.29.

Neither state had entered into an interstate agreement for these purposes. Fortunately, the Commonwealth of Massachusetts had planned for this ability. State statues had been changed in FY 2012 to allows the Commonwealth to explicitly state that the it could lease IT services to other states. Even with this in place, the laws of both states for critical terms such as indemnification, data ownership, legal jurisdiction and sovereign immunity needed to be resolved. It required over a year of continual efforts, that spanned a change in the Commonwealth governor, to craft a mutually acceptable agreement. This agreement has already been used as a model for the Connecticut Metropolitan District Commission (regional water utility) to also use the SDC. Other states are also pursuing use of the SDC.

The State of Connecticut was concluding a process to relocate its primary data center from East Hartford, CT to Groton, CT. The State reused the process developed to move to primary data center to also meet the DR center needs. While East Hartford and Groton served as DR facilities during the migration from one to the other, Springfield provided the same capability when East Hartford was de-commissioned. The relocation design was to extend the CT MAN and network VLANs to Springfield Data Center and reduce physical server relocations by migrating to VM. Additionally, minimal hands-on were required through remote KVM and power management. All these permitted for flexible data replications during any time of the week with minimal application changes, no change freezes, and no outages.

Additionally, numerous software upgrades were done as part of the relocation to make the IT environment more current and to reduce licensing costs. Every technical area was challenged to provide a new design for services with service enhancement and cost reduction in mind.

IMPACT:

The State's DR is now highly resilient, nimble, cost-effective and in a lights-out environment with automatic Network and Security recovery and continuous data replication, significantly improving disaster-recovery resiliency and performance: RTOs are now hours and RPOs are minutes rather than days, with the ability to operate at the Springfield Data Center indefinitely in the event of a disaster.   The State of Connecticut is now able to recover a broader range of State services than in the cold site model, and we will be able to offer active-active recovery.

The cost savings of being able to manage two facilities without adding additional staff is significant. Also, having the network, security, data storage and data being managed as production systems in the SDC alleviates the need for specific DR testing. The SDC capabilities are part utilized as a part of the High-Availability solution. They are tested whenever configuration or network changes are made. The Command Center in Hartford monitors the DR facility 24/7/365.

Standing up Springfield Data Center as the state's primary DR site took place over many weeks on a rolling cutover schedule enabled by the VLAN extensions and data replication. This network innovation required no application changes, no change freezes, no outages, and permitted the quick addition of data replication. Since the State moved the East Hartford Data Center in the same manner much of the equipment that was moved from East Hartford to Springfield didn't need reconfiguration.

Additionally, the legacy DR process was reliant on tape processing and off-site management of the tape. The State moved from tape to VTL with data replication to the Springfield Data Center therefore enabling current RPOs and rapid RTOs, and eliminating the need for on-site tape management support.

Only 2,000 S.F. of floor space is required primarily through enhanced use of new servers and VM.

Most importantly, this increase in capability was provided at a savings of over $50,000 per year for Connecticut and generated a reduction in operating costs for Massachusetts of $500,000 per year.