

→ Technology Modernization

The Software-Defined Enterprise

Moving to the software-defined enterprise can help agencies achieve unprecedented levels of agility and efficiency.

It's not much of a stretch to imagine a day when doctors and nurses within a hospital will be able to access critical patient information through smart screens in eyewear, watches, and tablets to provide the best care to our veterans; or when a federal law enforcement team will monitor all remote sensor and live video feeds during a highly coordinated sting operation from a table top touch screen within a strategic operations center.

These capabilities will take advantage of advanced technologies like wearable computers and the Internet of Things (IoT). And they are probably inevitable. However, they won't be possible without some big changes to the way agencies ingest, manage, integrate and share large amounts of data from diverse sources including sensors, video, social media

feeds, satellite imagery and more.

Most agencies today don't have an infrastructure that can support these types of capabilities, as well as less ambitious but equally important efforts like more efficient and effective provisioning and orchestration, quick response to issues, and resource allocation. In most cases, achieving these types of efficiencies is hampered by non-integrated technologies and systems.

The best way to achieve effective integration and greater efficiency and agility—the foundation for higher-level gains throughout the agency—is through software. Software is the most effective way to integrate, manage and control systems and capabilities. Defining everything via software has very practical, everyday benefits, something ThunderCat Technology calls FABRIC:

- **Fast:** The speed of information gathering and distribution today is unprecedented, requiring fast provisioning, access and results.

- **Adaptable:** Agencies that can't efficiently change to meet today's constantly shifting needs may stifle progress and innovation.

- **Built-in security:** With the rapid pace of change, security issues will only increase. The old method of buying a firewall or Intrusion Detection System (IDS) to manage security isn't enough anymore. The software-defined approach means security is built into the entire infrastructure.

- **Recoverable and Redundant:** Because the speed of information use is fast, when issues arise, agencies need to be able to recover and be operational quickly. Redundancy allows an agency's users quick access to synchronized information globally.

- **Integrated:** Using software to define and architect the environment creates the glue that holds everything; infrastructure, data, and apps, together.

- **Cost-effective:** Software-defined services save both time and money, allowing agencies to spend those resources on functions personnel that provide the most value to the mission.

Gaining these benefits requires defining as much of the enterprise infrastructure as possible via software. For example, infrastructure like networks, storage or servers can be virtualized and delivered as a service through the cloud. The ultimate goal is to move to a fully software-defined enterprise.

"When things are siloed, the

SDE Helps Agencies Meet Mandates

Besides the benefits of lower cost, greater agility and higher productivity, moving toward a software-defined enterprise (SDE) can help agencies meet many federal goals and mandates. The best way to meet the government's push toward digital transformation, for example, is indeed by moving toward the SDE.

The federal government is promoting digital transformation by encouraging agencies to adopt technologies like cloud, mobile, social media and the Internet of Things. Digital transformation efforts, fostered by organizations like GSA's Technology Transformation Service and 18F, along with the U.S. Digital Service, require advanced capabilities best accomplished by software-defined technologies and processes.

Agencies can also help meet the Data Center Optimization Initiative (DCOI), which requires scaling back on data centers, using advanced technology to optimize infrastructure and developing services-based solutions. All of these requirements are easier with a solid SDE.

OUTLOOK

→ Technology Modernization

interaction between different pots of information is more difficult and takes more time. When things are fully defined through software, agencies can respond to changing events, problems and requests much more quickly," says Kurt Steege, CTO of ThunderCat Technologies.

Step in the Right Direction

Most agencies are just getting started with the move to software definition. They usually start by virtualizing compute power. Many are also adopting software-defined storage and software-defined networking. More progressive agencies are

problem solving more difficult. "By abstracting the different pieces of the infrastructure through software, we can more quickly sift through the mounds of logs from disparate systems using a common frame of reference and more quickly resolve problems," says Steege.

When problems are discovered, it's important to respond quickly. That's best done through software-defined policy and response playbooks. These help complex and mission-critical enterprises continue running. Using a software-based approach also ensures the most critical issues rise to the top so they can be quickly addressed.

"When things are fully defined through software, agencies can respond to problems more quickly."

—Kurt Steege, CTO, ThunderCat Technologies

moving toward fully software-defined data centers. While moving toward a software-defined data center is an excellent start, it's just a step for agencies that want to reap the full benefits of software definition.

One of the best values is in the area of provisioning and orchestration—everything from user identity or access to resources or any other process. Performing these tasks on a case-by-case basis manually wastes valuable employee time and increases the risk of user error. Automating the process through software orchestration not only reduces errors, but frees up employee resources to be redeployed for more important tasks.

Another good use of software definition is troubleshooting. Agencies today have complex infrastructures no longer confined to the data center, which makes

The software-defined approach is also valuable in meeting compliance requirements and passing audits. When disparate sources of information, processes and systems are connected via software, it's easier for agencies to produce the evidence required by auditors.

Where to Start?

While the benefits are clear, it can be difficult to determine where to start in moving an agency toward a higher degree of software definition. Steege recommends first identifying a problem and then determining the best software-based approach to solve that problem. "The mistake so many organizations make is trying to use a new technology for technology's sake instead of addressing a specific need," he says.

One common issue facing most agencies is improving security or

compliance. In both cases, there is usually a lot of disparate information and toolsets. Also many critical tasks are still done by hand. The amount of information agencies are dealing with is growing so fast that it's difficult to determine what's important. Software orchestration, a component of software-defined networking that includes automated playbooks and/or reporting, helps bring the most relevant data to the forefront. This helps prioritize response.

Another problem many agencies have is trying to define larger-scale service-based offerings. To solve that issue, it might make sense to start with virtualizing storage and networks. In some cases, agencies may even start with a smaller, relatively simple issue, such as moving Office 365 to a hosted environment or using software to improve load balancing. "You don't have to be 'all in' to be a software-defined enterprise," says Steege. "It's an evolutionary continuum. It's about taking small building blocks and then using software to create connective tissue between them so they can work together."

ThunderCat Technology, a service-disabled veteran-owned small business, recently won the 2016 DHS Small Business Achievement Award. It also has received the JPL Star Award, has appeared on the Washington Technology Top 100, and was chosen as a finalist for Contractor of the Year at the 14th Annual Greater Washington Government Contractor Awards. ThunderCat Technology was also recently named to the CRN Tech Elite 250 for the fourth time.

**For more information,
please visit: thundercattech.com**

THUNDERCAT 
TECHNOLOGY