Roadmap to Your Cloud for State and Local Governments

Improve the Delivery of Citizen Services and Reduce Costs
“Our virtualization efforts with VMware to date have been extremely successful and are the foundation of our broader vision of providing private cloud services to state agencies—essentially transforming our operational model into an ‘IT as a Service’ platform.”

Tony Encinias
Chief Technology Officer
State of Pennsylvania
Reduced funding and increased costs in economically challenging times coupled with rising citizen demands for self-service are driving change across state and local governments. In municipalities, counties and state agencies, IT leaders are seeking ways to improve service delivery to meet diverse population needs while lowering costs.

These challenges are amplified in a world in which an increasing number of citizens and government staff expect access to services on their mobile devices. Meeting everyone’s needs securely and in a timely manner with existing resources poses new challenges for government IT leaders.

State and local agencies want to invest in state-of-the-art solutions that improve IT efficiency. Yet, budget constraints persist. IT leaders responsible for expanding centralized core services are now assessing how to effectively combine legacy and new applications into modern working infrastructure—while meeting the unique needs of departmental IT teams. All agencies are managing increasing information volumes in datacenters, which now consume more space and power than many public-sector agencies can afford.

“Data center consolidation. Virtualization of critical applications and resources. Emerging technologies. Continuous change will be the order of the day for state and local government IT (SLG IT) services agencies for the next ten years. So an ounce of preparation will be worth a pound of cure,” according to the authors of The Cloud Imperative: Better Collaboration. Better Service. Better Cost, a publication by the TechAmerica Foundation’s State & Local Government Cloud Commission.

In response to increasing pressures, state and local government IT leaders are looking to cloud computing as the most successful approach to

- Consolidate existing datacenters
- Drive down costs while providing more citizens with access to more services
- Keep data and applications secure and available
- Protect privacy and sensitive information
- Support the proliferation of end-user devices
- Maintain and improve service-level agreements (SLAs)

When agencies begin their journey to the cloud with virtualization—an IT transformation starting point that preserves existing investments—they realize significant agility, cost and security benefits.
A Vision of the Future

The VMware® vision for cloud computing in state and local government focuses on enabling agencies to adopt a new approach to IT while extending the useful life of existing investments. With virtualization as the foundation, agencies can build cloud architectures that are flexible enough to support a hybrid cloud model.

In state and local agencies, most applications and services are built on top of tightly coupled technology stacks that are challenging to change and costly to manage. The capital and operational costs of supporting complex and brittle legacy technology—combined with a growing need for on-demand services—have created a need for a more efficient, flexible and cost-effective computing model. Cloud computing, with its improved service-delivery model, allows IT to operate much more efficiently and respond faster to the changing needs of citizens.

By leveraging virtualization and deploying applications to a private or hybrid cloud, IT leaders can respond faster to the needs of their agencies. They can deliver IT-as-a-service capabilities, creating improvements at each critical layer of a modern IT architecture: infrastructure, applications and end-user computing.

As the National Association of State CIOs (NASCIO) wrote: “Cloud computing is a technology strategy that enables more than simply optimizing computing utilities. It enables strategies for optimizing government business services, and achieving new levels of orchestration of government services across a state, a region and even nationally.”

Virtualization First, Then Cloud

Virtualization is the foundation for cloud computing because it removes the dependencies between the software and the hardware that runs it. Agencies are no longer held to the traditional inefficient ratio of 1:1:1 for servers, operating systems and applications. This decoupling enables IT to turn underutilized infrastructure into an elastic, resilient, partitioned and secure pool of compute resources available on demand to applications and services.

Today, nearly every state and local agency operates at least one datacenter. If each undertook a simple 2:1 server-consolidation effort, it could presumably reduce the number of physical x86 servers by half and achieve significant cost savings. However, the cost-savings potential could be dramatically greater, considering that VMware customers achieve much higher average consolidation ratios.

In a virtualized datacenter, disaster recovery and continuity of operations are easier, and they do not require multiple layers of duplicate infrastructure. Use of hosted desktops as a service enables personnel to securely access work remotely, staying productive while IT retains control.

In the most recent Gartner Inc. Magic Quadrant for x86 Server Virtualization Infrastructure, VMware was placed in the leaders quadrant. As the industry pioneer in virtualization, VMware is defining the new era of cloud computing.


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Evolutionary Approach to Your Cloud

With VMware, you can embark on an evolutionary path to building the most important cloud—your cloud—to meet your agency’s unique needs. The VMware approach, which begins with virtualization, allows state and local IT leaders to transform server, storage and networking resources into secure, efficient resource pools to enable IT as a service. By supporting both private and hybrid cloud infrastructure, VMware solutions deliver agility, security, flexibility and cost savings.

VMware offers three complementary on-ramps to cloud computing: Cloud Infrastructure and Management, Cloud Application Platform and End-User Computing. State and local agencies can pursue initiatives in these areas in any order or simultaneously; however, most VMware customers begin at the infrastructure layer. As they progress, agencies gain value and benefits throughout their transformation that accelerate and amplify the value of IT.

Figure 1: VMware delivers customer-proven cloud infrastructure and management, cloud application platform, and end-user computing solutions.

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“Over the last several years, during our IT transformation journey, we aggressively virtualized our environment to provide the necessary flexibility and agility to meet our program needs, plus set the technological stage for cloud computing to address our disaster recovery needs.”

Joseph A. Panora
Agency, Chief Information Officer
California Department of Corrections and Rehabilitation (CDCR)

Agility

Seventy-seven percent of state and local IT professionals say that their agencies have implemented server virtualization, and many report achieving their top server-virtualization goals, including consolidating servers and improving efficiency.³
Cloud Infrastructure and Management

Over the years, state and local IT teams have added servers and datacenters to meet the constant demand for new services and applications. Consequently, agencies are now dealing with server sprawl and growing IT complexity, which have brought with them higher costs, decreased ROI, decreased manageability and reduced efficiency.

With virtualization, which removes software and hardware dependences, IT leaders can increase responsiveness while dramatically reducing capital and operational expenses. Many public-sector agencies today are using VMware solutions to reduce datacenter and capital costs, decrease time spent on routine administrative tasks, and cut datacenter energy costs—all without sacrificing compute performance.

Eighty-two percent of government IT leaders are currently using and plan to use either a private or hybrid cloud model. Through the enterprise hybrid cloud, VMware gives state and local agencies the security, performance and control of a private cloud with the economies of scale and agility of the public cloud.

VMware cloud infrastructure and management solutions enable state and local agencies to:

- Virtualize mission-critical applications, such as health and human services systems, to deliver IT services more effectively without compromising on performance
- Increase the control and security of IT infrastructure with automated operations that help to enable compliance, continuity and disaster recovery
- Leverage existing investments while bridging to the cloud deployment model of choice

Greater Agility

VMware solutions extend the useful life of existing public-sector IT investments for both IT production applications and business-critical applications. By virtualizing their most important applications—such as geographical information systems (GIS), 911 emergency-management systems and enterprise resource planning (ERP) systems—agencies can accelerate application delivery. They can improve service quality during peak periods—including unemployment-compensation and welfare payment cycles—through dynamic scaling and high availability. They can also develop disaster recovery (DR) plans and processes that eliminate costly datacenter replication or take advantage of DR programs operated by other agencies. With VMware solutions, agencies can run critical applications with higher reliability, at lower cost.

“...VMware software has been key to our ability to tackle new initiatives. From server consolidation and virtual desktops to disaster recovery, we continue to enhance our services and improve efficiency,” says Rick Wall, director of Information Services, City of North Myrtle Beach, South Carolina.

Improved Manageability and Increased Choice

Virtualization and cloud management solutions from VMware allow public-sector agencies to be proactive and respond to new demands on their infrastructure. VMware solutions automate operations, including change management, capacity planning and
disaster recovery. Through a single dashboard, IT leaders can get a comprehensive view of real-time performance issues and risks to intelligently pinpoint, analyze and prevent potential performance issues before they affect citizens. VMware management features virtualization-aware security and continuously automated compliance. With VMware solutions, agencies can better manage the lifecycle and health of their datacenter infrastructure.

VMware solutions support application portability—seamlessly moving applications between private and public clouds—by working closely with service providers to leverage the VMware secure and managed infrastructure platform. The hybrid cloud model provides freedom of choice and dynamic scaling to meet demands. Agencies can work with preferred providers and move in and out of a public cloud according to their needs—without vendor lock-in. With the VMware open and evolutionary approach, government IT leaders can minimize both risk and service disruption.

Cloud Application Platform

In government agencies, the heavyweight application server and database-centric architectures of old are giving way to lightweight development and runtime platforms. These new platforms accelerate the application-deployment cycle, provide elastic scale and reduce costs. With VMware solutions, agencies can modernize the applications they use today and build the ones they will need tomorrow.

The VMware cloud application platform enables state and local agencies to

- Build modern, Web-oriented applications in less time
- Deliver cloud-ready applications optimized to run on virtual infrastructure
- Enhance application portability between public and private clouds
- Overcome relational-database bottlenecks and enable real-time data
- Increase the reliability, availability and scalability of applications

VMware solutions enable fast and easy access to data and applications—even on disadvantaged or intermittently connected networks—to enhance situational awareness and improve decision making for first-responder and law-enforcement teams. VMware common services and the hybrid cloud are being leveraged by other agencies to add consumer applications—such as social networking, 311 systems and collaboration—into existing and new citizen applications.

Moreover, with widely used frameworks and tools, including the Spring framework and VMware vFabric™ Hyperic®—core components of the VMware cloud application platform—state and local agencies can reduce coding, improve application performance and further innovation. “There have been multiple occasions where it would have taken us days to find and fix problems that we can now easily identify and resolve within minutes with VMware Hyperic,” says Jason DeHaan, CIO for Chicago, Illinois.

CALIFORNIA DEPARTMENT OF WATER RESOURCES

Virtualization and Other Technologies
- Saved $2.2 million in maintenance costs
- Condensed 200+ server racks to 4 racks
- Reduced power consumption by 40%
- Reduced cooling costs by 50%
- Better performance and business agility
- Better access to data for residents

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End-User Computing

In the post-PC era, citizens and government employees increasingly require access to information and applications on a variety of devices—where and when they want it. Securely meeting mobile users’ needs using existing systems poses challenges for IT leaders.

VMware end-user computing solutions can be used to:

- Simplify - Transform end-user assets into centralized IT managed services
- Manage - Create a central point for IT to control end-user access to IT services across the public and private cloud
- Connect - Improve end-user connectivity to IT services and to other end users on mobile devices

VMware solutions enable IT to deliver desktops as a service. Agencies can quickly provision, deploy and keep sensitive data secure by centrally storing desktop images and data on servers behind agency firewalls, minimizing the risk of security breaches resulting from laptop theft or data loss. Now IT staff, government employees and citizens can securely access these resources from multiple devices and locations.

Increasingly, agencies are using VMware end-user computing solutions to save up to 50 percent on desktop management costs, improve continuity of operations, extend the reach of field employees, and deliver a superior experience to staff and citizens.

“One of our major triggers for going to desktop virtualization was doing more with less. VMware View is being extended into our cloud strategy to provide infrastructure as a service to other departments,” says Alex Musicante, systems security architect, Information Systems Department in the City of Pittsburgh, Pennsylvania.
Providing Security and a Proven Path

Stronger security proven through direct monitoring—providing greater control and visibility—is the highest standard for trust in the cloud. Together, VMware and RSA, the security division of EMC, are delivering this proof-driven standard of trust today. Through the transformative power of virtualization and industry-leading solutions, VMware is making security and compliance in the cloud logical and information-centric, built-in and automated, and risk-based and adaptive.

Virtual infrastructure can be inherently more secure and stable than traditional physical infrastructure, which reduces an agency's attack profile and makes it easier to isolate breaches or contaminated infrastructure. Through significant investments in security solutions, VMware provides an additional layer of protection for more-sophisticated virtual environments. VMware provides IT teams with a single comprehensive framework for securing virtual datacenters and cloud environments at all levels—host, network, application, data and endpoint. With VMware security solutions, agencies can centralize security across the virtual datacenter, secure the edge of the virtual datacenter, protect applications from network-based threats, and offload antivirus and antimalware processing for endpoints.

Value Along the Way

VMware helps state and local agencies transition to cloud computing in three phases: IT Production, Business Production and IT as a Service. Agencies experience significant benefits during each phase of the journey, rather than having to wait until all phases are complete.

Figure 3: VMware offers a practical, three-phase journey to IT as a service for agencies transitioning to a cloud computing approach.
More IT infrastructure is virtualized on VMware than on any other platform. VMware virtualization and cloud infrastructure solutions are run by government agencies of all types and sizes—from small and midsized cities, towns and counties, to police and fire departments, to large state and federal agencies around the world. Additionally, VMware solutions are in use by all 15 U.S. executive-branch agencies; by U.S. Department of Defense agencies, services and joint commands; and throughout the legislative and judicial branches of the U.S. government.

In these agencies, virtualization and cloud computing are enabling significant benefits including cost savings, greater agility, increased efficiency, faster application development and deployment, decreased real estate, lower power and energy consumption, and more.

VMware introduced x86 server virtualization—the foundation for cloud computing—to the world in 1998. Now, VMware is the global leader in virtualization and cloud infrastructure.

By providing the same cloud infrastructure to both government agencies and service providers, VMware enables secure interoperability between private and public clouds—bringing all of the benefits of a hybrid cloud approach. VMware solutions are based on open standards and extend to a global partner network of public cloud providers, allowing state and local IT teams to move applications and data between clouds quickly and easily.

Committed to dramatically reducing IT complexity for more than a decade, VMware award-winning solutions have transformed IT for more than 350,000 customers in the commercial and government sectors. VMware provides an evolutionary and pragmatic path to the cloud based on the industry’s most widely used virtualization platform. VMware solutions are complete and completely flexible, so you can build the most important cloud in the world.

**Your Cloud. Accelerate IT. Accelerate Service Delivery to Citizens.**
Learn more

Contact VMware
3401 Hillview Avenue
Palo Alto, CA 94304
877-4-VMWARE

www.vmware.com/industry/government