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Driving Better Government at Lower Cost

Digital transformation is fundamentally shifting how government organizations fulfill their missions. Agencies are modernizing their IT foundations, tapping the power of software and cloud to deliver legacy and modern applications faster, more securely, and at scale. Virtualization powers the delivery of infrastructure and applications, with automation dramatically improving operational efficiency. Automation helps ensure applications of all types, from legacy and web to SaaS and cloud-native, are instantly available, reducing overhead and improving service while keeping IT in control.

Addressing Key Challenges
With agencies focused on cost containment and workers as well as constituents becoming more adept at using technology, modernizing and automating IT can be the answer departments have been looking for to address four critical government concerns:

1. How do we drive greater agility?
2. How do we deliver agency outcomes faster?
3. How do we better manage risk?
4. How do we reduce costs?

Accelerating Agility
The good news is there’s a path to IT modernization your agency may already be on or can start today. The key is IT automation. A mission-critical component of any software-defined data center (SDDC), cloud infrastructure and management strategy, automation helps you deploy and scale new services and provision infrastructure instantly. This gets your IT team out of the labor-intensive operations business and drives incredibly efficient, dynamic resource management. For your agency this means more agile IT that can support new initiatives with minimum disruption.
Building the Case for Automation

It’s no secret automation accelerates time to benefit.

Government organizations interested in maturing IT capabilities at their own pace—from reactive to proactive to predictive—can combine a proven model with trusted partner expertise to uncover paths that accelerate agency outcomes.

<table>
<thead>
<tr>
<th>Government IT Capability Maturity Model</th>
<th>Operational Tools &amp; Technology</th>
<th>Process</th>
<th>Roles</th>
</tr>
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<tbody>
<tr>
<td>Predictive</td>
<td>Automated, policy-driven operational control</td>
<td>All IT functionality delivered “as a service” with continuous process, service, and performance improvements, based on predictive capabilities</td>
<td>Fully transitioned org structure with Portfolio Managers, Service Managers, Converged Architects and Incubation Teams</td>
</tr>
<tr>
<td>Business Automation</td>
<td>Automated process management and operational controls</td>
<td>Business critical services offered and controlled within the virtualization or cloud computing layers with detailed measurements and metrics</td>
<td>Expanded operations roles, including process owners, service owners, front-office (tenant operations) and infrastructure operations (back-office)</td>
</tr>
<tr>
<td>Proactive</td>
<td>Complete operational control and quality of service assurance</td>
<td>Services governance and lifecycle are defined. Design and development processes for services are established with financial transparency at the service level</td>
<td>Ongoing role implementation with service delivery focus and infrastructure operations (back-office) focused</td>
</tr>
<tr>
<td>Service Driven</td>
<td>Limited control over virtualization and cloud computing layers</td>
<td>Objectives defined, limited automation, manual or automated integration with existing IT processes (change, configuration)</td>
<td>Initial set of roles established, especially service owner</td>
</tr>
<tr>
<td>Controlled</td>
<td>Defined for virtualization environment</td>
<td>Adapted for virtualization, largely manual with basic operational controls defined (monitoring, error notification)</td>
<td>Roles specialized for management of virtualized environment</td>
</tr>
<tr>
<td>Reactive</td>
<td>No support for virtualization or cloud computing</td>
<td>Objectives undefined, ad-hoc and manual</td>
<td>Roles are undefined</td>
</tr>
<tr>
<td>Basic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ad-Hoc</td>
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The Power of Automating Government IT

Delivering more than IT improvements, IT automation

Accelerates business agility

- Transform IT operations by eliminating manual, time-consuming, error-prone, low-value IT maintenance tasks
- Gain the time and resources required to support innovation
- Meet demands for new delivery models, enabled by a multi-cloud environment while still supporting legacy apps

Speeds agency outcomes

- Move out of the business of provisioning infrastructure, while giving workers what they need faster
- Improve resource utilization through automated allocation and reclamation of unused capacity
- Manage application lifecycles with no manual overhead
- Position your infrastructure to be ready to add, move, or remove workloads in an instant

Improves risk management

- Simplify auditing and reporting as workloads and application diversity grow
- Streamline and standardize compliance by automating workflows
- Proactively reduce internal and external threats

Lowers costs

- Virtualize compute, storage, networking, and security on a single foundation to lower costs (CapEx and OpEx)
- Easily manage apps on-premises and in public clouds, such as Amazon Web Services, from one platform
- Adopt public cloud infrastructure, as needed, for capacity

"Ten to fifteen years ago, the IT environment looked much different. We had to have a server for everything, which took time to procure and provision. Now, using VMware solutions simplifies our work and makes us more nimble and responsive to stakeholders."  

ROB LLOYD
CIO, CITY OF AVONDALE, ARIZONA
The Foundation: A Software-Defined Data Center

If you’ve already virtualized compute in your data center, you can now easily extend virtualization to your entire stack. From there, extend to the cloud to safely deliver data and apps to and from anywhere. Move one workload at a time or scale more quickly. Either way, all components can be managed—data center, private or public clouds, SaaS apps—from a common management foundation that leverages your team’s existing knowledge and skill sets.

A software-defined data center (SDDC) advances innovation and helps improve IT service delivery by eliminating rigid technology silos between infrastructure and apps, and between app types. Adding automation to the SDDC environment speeds agency and technical goals:

• **Compute** – If compute virtualization is already helping your agency reduce costs, increase workload availability and performance, and minimize or eliminate downtime, your agency is ready for the next step.

• **Storage** – Storage virtualization pools together server-attached flash devices and/or hard disks to provide a highly resilient shared datastore suitable for a variety of workloads to improve utilization, easily scale without disruption, and drastically lower TCO.

• **Networking & Security** – Network virtualization reproduces the physical network in software, enabling IT to reduce provisioning time from days to seconds, improve operational efficiency by reducing manual tasks, and provide a more secure data center with security policies attached to an individual workload.

A software-defined approach enables government IT teams to more easily deliver the always-on platform that is increasingly expected by agencies, their employees, and ultimately the public being served. And of course, the most demanding applications run flawlessly on software-defined infrastructure.
Automating the Government SDDC

**AUTOMATION FOR FULL-STACK PROVISIONING OF INFRASTRUCTURE AND APPLICATIONS**

Automate the provisioning of all infrastructure and application components to minimize time-consuming manual efforts and eliminate bottlenecks.

- Easily adapt to changing security requirements or regulations through IT policies that you set and deploy instantly, across clouds and in the data center.
- Templatize your infrastructure into blueprints, including networking & security profiles, to deliver applications faster and create standardized services.
- Reduce errors and rework while improving IT service delivery.
- Take advantage of built-in policy-based governance to ensure that users get the right size service at the appropriate SLA for the job.
- Use IT automation to easily deprovision or scale without disruption.

**VIRTUALIZATION OF ALL NETWORKING AND SECURITY COMPONENTS INTO THE HYPERVISOR LAYER**

Replicate all networking and functions in software embedded in the hypervisor, regardless of the topology of your physical infrastructure.

- Significantly improve operational efficiency and shift workloads seamlessly between disaster recovery (DR)/business continuity (BC) sites or other data centers.
- Automate the provisioning of networking and security policies attached to applications and help ensure compliance—regardless of their location.
- Automatically ensure security and data protection policies are enforced during app upgrades.
- Take advantage of central management capabilities not only for compute and storage, but for networking and security functions as well.
- Create resilience in application deployment and security.

**STREAMLINED INFRASTRUCTURE AND APPLICATION LIFECYCLE MANAGEMENT**

Centrally manage the provisioning, delivery, and ongoing maintenance of infrastructure and applications.

- For example, automate the correct sequencing and dependencies for complex upgrades.
- Govern IT resources with consistent policies across public and private cloud environments.
- Reduce the risk of noncompliance or security breaches through automated, cross-cloud policy enforcement.
- Align the performance, availability, and capacity of provisioned services with both agency needs and the specific needs of your environment.
- For example, ensure availability and performance through optimized infrastructure sizing and forecasting.
Build Your Agency SDDC with VMware

Interested in experiencing virtualized compute, storage, networking with IT automation first-hand?

Try a VMware Hands-On Lab.

Blueprints for Success

VMware Validated Designs provide comprehensive and extensively-tested blueprints to build and operate an SDDC for government. With Validated Designs, VMware delivers holistic data center-level guidance on how to efficiently deploy and configure the complete VMware SDDC in a wide range of use cases.

Validated Designs help teams by:

- **Streamlining and simplifying** the typically complex design process of the SDDC, shortening deployment and provisioning cycles
- **Providing detailed, step-by-step operational guidance** to greatly reduce time and effort spent on tasks such as setting up monitoring and alerts, developing backup and restore procedures, and ensuring compliance
- **Reducing uncertainty** and potential risks associated with implementing and operating the SDDC by ensuring interoperability and compatibility of all software components included in the design
- **Driving IT agility** with designs architected for scalability and to support a broad set of use cases and diverse types of applications, helping IT teams to respond faster to the needs of their agency
Overcome the Limitations of Manual IT Processes

Deploy automation to help your agency speed traditionally time-consuming, error-prone IT processes.

Deliver Infrastructure and Applications Faster

Automation reduces time spent provisioning infrastructure and apps, so workers have the data, apps, and information they need, when they need it. It also helps ensure public-facing employees have the resources required to best help constituents.

Eliminate Bottlenecks

Government IT teams are deploying IT automation to eliminate the bottlenecks of manual infrastructure configuration, provisioning, and scripting. In a full SDDC, IT teams can model infrastructure and applications as “blueprints” with embedded automation and policies, defined by roles and identities. Application blueprinting streamlines resource management for capital and operational savings. It also gives IT teams the agility to transform the entire service lifecycle.

Reduce Administrative Overload

For the first time, government IT teams can manage legacy applications with virtually no overhead. On-premises applications are part of the government landscape today and will remain so for some time; not only that, but agency IT teams must deal with additional legacy applications resulting from organizational downsizing or restructuring. Automation eases administration through instant infrastructure provisioning and manages legacy apps with the consistency of IT policies that you control.

“ Our job is to bring forth the best technology in cloud computing to help our customers execute their missions. The number one priority for us is automation. We see automation as a key area to create our value-add services at the price points and needed security levels our customers require. ”

COBY HOLLOWAY
VICE PRESIDENT OF CLOUD COMPUTING AND DIGITAL INFRASTRUCTURE, SAIC, A FEDERAL SYSTEMS INTEGRATOR
An Evolution to Adoption

Agencies rely on VMware’s proven solutions to achieve mission objectives while demonstrating accountability, value, and ROI. A software-defined approach provides a safe, proven path to modern IT that spans data center, cloud, digital workspace, and security. As with any challenge, a huge opportunity exists to do more than meet rising demands, but to improve the experience of employees, citizens, and IT teams while harnessing the power of cloud to lower cost and improve agility.

Beyond VMware vSphere: Leverage Your Teams’ Existing Skill Sets

Now your team can easily extend virtualization beyond compute to include storage, networking, and security—all managed through a common foundation for simplified administration. Move workloads into the SDDC at your own pace. Use a common platform to manage virtual machines, networks, and storage. VMware Cloud Foundation™ provides integrated cloud infrastructure and cloud management services so you can run enterprise applications in both private and public environments.

Public Cloud? Meet VMware Cloud on AWS

VMware Cloud™ on AWS is an on-demand service that enables you to run applications across VMware vSphere® based cloud environments with access to a broad range of AWS services. Powered by VMware Cloud Foundation, this service integrates vSphere, VMware vSAN™ (virtual storage) and VMware NSX® (virtual networking) along with VMware vCenter® management, and is optimized to run on dedicated, elastic, bare-metal AWS infrastructure. With this service, IT teams can manage cloud-based resources with familiar VMware tools.

Because cloud is a strategy, not a destination, VMware helps teams gain a better understanding of the needs of their workloads and ensure those workloads always have what they need to achieve agency goals. VMware’s open and interoperable approach to hybrid cloud saves IT teams the time and hassle associated with reinventing, replatforming, and rewriting application code, and together, VMware and VMware Cloud Providers help ensure agencies have a platform that provides freedom and control today and into the future.
Gain Greater Agility and Meet Compliance and Regulatory Standards

Automation is required to gain the speed and agility today’s agencies need. VMware vRealize® Automation™, part of VMware vRealize® Suite™, is a comprehensive, proven, enterprise-ready platform that speeds service delivery and improves IT operations for both employees and developers. vRealize Automation helps IT teams gain control while giving workers the flexibility to use any application from any cloud. vRealize Automation extends all of your policies to all workloads—whether they are in a public, private, or hybrid cloud. Auditing and reporting are streamlined. Gain peace of mind with automation, knowing that deployment of services to any endpoint is consistent, repeatable, and governed by policy.

Drive Mission Fulfillment at Scale

Government organizations are leveraging IT automation to ensure consistent, repeatable delivery of applications and infrastructure, so employees, contractors, and the public have a consistent experience—even for agencies extending across vast ecosystems and interacting with local, regional, state, and federal offices.

Using vRealize Automation and VMware NSX together, IT staff can model complete, multi-tier application environments that bake in network and security policies. Efficiency is greatly improved through repeatable processes, seamlessly delivered time and time again. Through native integration of vRealize Automation and NSX

- Dynamically build networking and security services into your blueprints, standardizing delivery and reducing manual overhead
- Leverage micro-segmentation to protect east-west traffic and secure applications easily and consistently, regardless of where they live and throughout their lifecycle

“ I can actually manage my entire network in the palm of my hand and have my organization online 24 hours a day, 365 days a year. ”

JASON KADUK
IT DIRECTOR, VALLEJO SANITATION AND FLOOD CONTROL DISTRICT
Accelerating Innovation in Government

Government IT teams, including organizations that contract to deliver services to them, are tapping the power of virtualization, cloud, and automation to deliver services faster, scale new applications reliably, and dramatically lower IT costs.

These are just some of the government initiatives relying on VMware technologies to modernize and automate IT in Government:

- Meet goals for data center consolidation and cost containment
- Drive greater mission fulfillment through automated, modern IT services
- Support Cloud-First mandates
- Secure remote access to information
- More easily collaborate with contractors and other agencies
- Deliver new applications securely, and at scale
- Safeguard data and protect privacy
- Ensure business continuity and disaster recovery
- Improve performance and uptime of critical applications and systems
- Manage any cloud from a common management platform

Vallejo Sanitation and Flood Control District met its goal of 99.99 percent uptime for business-critical operations and reduced desktop provisioning from 14 days to 10 minutes after deploying VMware network virtualization and automation.

Ohio Department of Transportation reduced contractor onboarding times from weeks to hours; lowered change requests from 4-6 weeks to days; and achieved significant operational efficiencies by automating with VMware.

A U.S. Federal Civilian Agency combined hyper-converged infrastructure with vRealize Automation to streamline management and delivery of private cloud resources, reducing TCO of the IT environment by 50 percent while improving application performance and storage response.
A Case Study

The California Natural Resources Agency (CNRA) restores, protects, and manages the state’s natural, historical, and cultural resources. The agency supports 33 departments, including the largest water delivery system in the U.S., California State Parks, Cal Fire, and Fish and Wildlife.

Challenges
- Separate IT departments in each state organization meant redundant architecture silos
- Budget and technical resource shortfalls prevented achievement of department objectives
- Operational inefficiencies impaired service delivery

Solution
To improve operational efficiencies and IT service across all departments, CNRA began a journey to consolidate infrastructure and unify IT operations. CNRA leveraged VMware SDDC and hybrid cloud solutions to consolidate 24 data centers into one. The agency then deployed a hybrid cloud to extend resources and accelerate application delivery. Using VMware vRealize Suite, CNRA operates its hybrid cloud at peak efficiency, maintaining consistency and reliability of all IT services. With VMware NSX and vRealize Automation, the agency is able to micro-segment mission-critical applications and automate network management, making CNRA a far more agile and secure shared-services provider.

Benefits
- Reduced overall CapEx and OpEx costs by 30 percent
- Increased capacity by 300 percent
- Shrank physical footprint by more than 60 percent

“...if you ask our business people what the biggest benefit is to them, it will be time to market. The ability to be a service provider allows us to quickly deliver technology capacity and capability to them, and we’ve really embraced this way of doing business.”

TIM GARZA
IT DIRECTOR, CALIFORNIA NATURAL RESOURCES AGENCY
Agencies Gain IT Speed and Agility with VMware

The future of government agencies is digital, and digital transformation requires IT automation.

The speed, efficiency, and consistency of automation enables government IT teams to improve delivery and user experience while containing costs. When your agency IT team automates, it eliminates bottlenecks. Most important, teams ensure a foundation of faster service delivery in a modern technology ecosystem that includes legacy and cloud-native apps, as well as on-premises and public cloud services.

Only by modernizing and automating IT can your agency rise to the challenge of meeting ever-demanding worker and citizen expectations. Modernization and automation are also the surest ways to drive greater agility, deliver agency outcomes faster, better manage risk, and reduce costs.

Get Started with VMware

For your technical teams, Hands-On Labs are an ideal way to try VMware solutions today. Government leaders can also learn more or join the IT modernization and automation conversation:

> **Web** @ http://www.vmware.com/go/government
> **Twitter** @ vmwaregov
> **VMware Industry Blog** @ https://blogs.vmware.com/industry-solutions/government