Government Services Modernization

Google Cloud
The Goal:
Run IT Services Like Google
In one day at Google...

- 30,000+ developers
- 1 billion files
- 800,000 builds per day
- 2 billion lines of code
- 2+ PB of build outputs per day
- 40+ engineering offices
- 9 million source files
- 45,000 commits per workday
- 150 million test cases run per day
The Problem in State/Local Government

Increasing Complexity
IT Environments are becoming more varied with combinations of legacy, on prem, and cloud creating policy and administrative nightmares.

Shrinking Budgets
IT Budgets have grown overtime, and are now being asked to cut and trim. Every team is being asked to do more with less.
Uplift your VMs today...

... while building for tomorrow.

- Trust nothing - Best in Class Security
- Manage Easier - Making the World’s Best Hybrid Cloud
- Modernize Your Environment
Increasing Complexity

01 Security
From phishing to DDOS to insider threat management, the security theater has never been more complex.

02 Management
As workloads get larger and more critical the ability to manage via policy gets harder and riskier.

03 People
How can IT staffs stay up to date with all the changes and be responsible from everything from a Mainframe to Kubernetes?
To pay, or not to pay? That is the question. Whether ‘tis nobler to suffer or give in to the demands of ransomware.

Tormented Executive
AnyTown, USA
Security that just works
Security: defense in depth
Managing in a Hybrid World

- Public Cloud
- Hybrid Cloud
- Private Cloud
- Traditional Infrastructure
Hybrid done right

A software-based stack
means no hardware purchase required. Zero to deployed in less than a few hours rather than months.

Built on open software
for uniformity; one platform that can run both on-prem and in the cloud without lock-in

Infrastructure abstracted away
focus on building apps not managing infrastructure.

Google Cloud
## What is Modernization?

<table>
<thead>
<tr>
<th>Open software</th>
<th>Microservices</th>
<th>Containerization</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Avoid lock-in</td>
<td>• Move at the speed of your fastest developer</td>
<td>• Increase portability of applications</td>
</tr>
<tr>
<td>• Avoid unnecessary licensing costs</td>
<td>• Use the best tools</td>
<td>• Increase security</td>
</tr>
<tr>
<td>• Broad ecosystem of partners</td>
<td>• Leverage small and agile teams</td>
<td>• Increase speed</td>
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<table>
<thead>
<tr>
<th>CI/CD and DevOps</th>
<th>Orchestration</th>
<th>Services and API management</th>
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<tr>
<td>• Create a software assembly line</td>
<td>• Define goals, instead of actions</td>
<td>• Decrease downtime</td>
</tr>
<tr>
<td>• Build fast feedback into your systems</td>
<td>• Less idle resources</td>
<td>• Increase portability of services</td>
</tr>
<tr>
<td></td>
<td>• Manage apps instead of servers</td>
<td>• Manage access and testing of services</td>
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</table>
Example: Before L&S
Example: After L&S

GCP

Users → External applications → Load balancer → Web (Web Server, Linux) → Application (Application Server, Linux) → Application storage (MySQL Server, Compute Engine)
Anthos Migrate

Migrate VMs as-is or upgrade to containers
Negligible app downtime (often < 10 minutes)
Built-in pre-migration testing and post-migration rollback options
Cloud instance rightsizing
Our unique services accelerate your transformation

Role-Based Learning
Develop talent and scale workforce fluency and adoption with hands-on training and robust certification standards

Technical Account Management
Build a roadmap for long-term success with dedicated program management and Google thought leaders

Consulting
Jumpstart your cloud journey with our proven practices - migration, data analytics, ML, app development, change & culture, security & trust

Engineer to Engineer Support
Maximize reliability with deep technical expertise fully vested in your operational success, available 24/7/365
Shrinking Budgets

CLOUD & COMPUTING

Agencies Want Cloud, But Legacy Costs Hinder Progress, Survey Says

Respondents from local, state and federal governments say about 80 percent of software runs on in-house servers.
### IT is forced into trade-offs

<table>
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<th>Security vs Agility</th>
<th>Reliability vs Cost</th>
<th>Portability vs Consistency</th>
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<tbody>
<tr>
<td>• Development wants to use the latest tools, languages and plugins</td>
<td>• Redundancy is the way to minimize downtime</td>
<td>• Lock-in gives you consistency</td>
</tr>
<tr>
<td>• Security wants verified tools and validated systems before putting it into production</td>
<td>• Redundancy means underutilized resources</td>
<td>• Lock-in keeps you from using the best tools, negotiating better prices, or being as flexible as you want</td>
</tr>
</tbody>
</table>
Google offers a faster, less complex entry to the cloud. Many VMs don’t benefit from running on-prem. And can be migrated to Google Cloud easier than you think. How?
Up to *35%* of cloud spending is wasted

<table>
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<tr>
<th>Pre-migration Rightsizing</th>
<th>GCE Custom Machine Types</th>
<th>Automatic sustained use discounts</th>
<th>GCE Post-migration Rightsizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated cloud instance sizing prior to migration</td>
<td>Machine CPU and RAM configuration that suits your needs</td>
<td>You cannot forget the discounts</td>
<td>Dynamic adjustment of cloud instance resources after application migrates into GCP</td>
</tr>
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</table>

*RightScale 2018 State of the Cloud Report™
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Do more, pay less.

- Per second billing
- Committed use discounts
- Preemptible VMs
- Flexible configurations
- No upfront costs
- No termination fees
- No upcharge for Government/Security

Source: Kinsta
Lift and **modernize** your VMs

- Super-fast startup: **VMs boot in seconds, not minutes**
- Custom machine types = **no over-provisioning**
- **Automatic** app-specific sizing recommendations
- Data encrypted in motion and at rest.
- High IOPS for vCPUs = **faster computations**

- Sustained use discounts = **no upfront payments**
- Millisecond access for all storage classes
- Per-second billing = **truly elastic costs**
- Resize disks on the fly = **easier operations**
- Built-in **redundancy and scale**

Google Cloud
Realize value all along your journey to cloud...

Identify which workloads to move first, getting on-track faster.

Minimize disruption.

...And get there faster.
Realize value in weeks, not months

We can help you identify the workloads you should move first, getting you on track faster
Let’s start your journey

New Workloads
Build new cloud-native apps or spin up new data warehouse

On-Prem Migration
Lower costs by migrating Cloud Ready services to Google Cloud

Service Transformation
Deliver new constituent experiences, redesign service delivery and transform culture

Next Steps:
1. Google Cloud & Cloud Physics to perform a discovery & assessment of your IT landscape
2. 1-day workshop with Google Cloud customer engineers and solution architects
3. Design a proof of concept pilot to start the Cloud journey
The journey to transforming with Google Cloud

Addressing barriers to transform

- Security concerns, privacy/trust
- Lack of cloud skills
- Technology immaturity
- Change resistance
- Silos; lack of collaboration across agencies and IT

Set up a team or COE, build leadership buy-in

Engage employees, train on Google Cloud tools, publicize vision

Launch high-impact wins, publicize successes

Cloud solutions permeate agencies
Thank you

Learn More:

To the cloud, your way  Google Migration Center
Why Google Cloud?  Solution Overview (PDF)
Introducing Google Cloud’s Anthos

 Anthos lets you build and manage modern hybrid and multi-cloud applications without lock-in

Build once, to run anywhere, across your existing on-premise infrastructure and all major public cloud providers