Government Reimagined

Top 5 Takeaways from Google Cloud Next 2019

Google Cloud

In April 2019, tens of thousands of people descended on San Francisco, CA to participate in Google Cloud's annual Next event. Representatives from federal, state, and local governments were among those present to share how their partnerships with Google Cloud are transforming public sector services and reimagining mission capabilities.

Thomas Kurian, CEO of Google Cloud, headlined the event with a keynote speech that highlighted Google Cloud as an intelligent, innovative, and secure platform dedicated to driving mission success. In the span of three days, Kurian and Google Cloud released more than 120 announcements showcasing the company's product innovations and partnership stories, with additional insights gained from 400 breakout sessions featuring lectures and demonstrations by today's top cloud innovators.

What were the highlights? Read on to find out.

1 Security first, no exception

It's not up for negotiation: safeguarding national intelligence, protecting critical infrastructures from cyberattacks, and securely storing the medical data of millions of citizens are essential public sector missions, and the increasing frequency of attacks on data operations in recent years has only escalated the importance of cloud security to government agencies.

Colin Ahern, who is Deputy Chief Information Security Officer (CISO) at New York City Cyber Command (NYC3), spoke to a packed audience at Next about the threats facing citizens in his city and what his agency is doing to thwart them. With a population of more than 8.5 million individuals and playing host to approximately 60 million visitors every year, New York City presents an attractive target to malicious cybersecurity actors who believe they can use that congestion and ubiquitous 'network noise' to their advantage.[1]

In partnership with Google Cloud, Ahern and his team have pursued a cloud-first, cloud-native approach that employs open-source tools and machine learning in the creation of its data pipeline. Ahern says his team required a secure, cloud-based security log aggregation platform for city systems that could enable alerting, visualization, and analytics for his staff, while providing the flexibility to scale up as needed to combat more sophisticated threats.

At a glance: New York City Government IT

- **Over 330,000 employees**
- **400,000 endpoints**
- **Totalling about 1,000,000 systems**
- **100+ state agencies/departments**

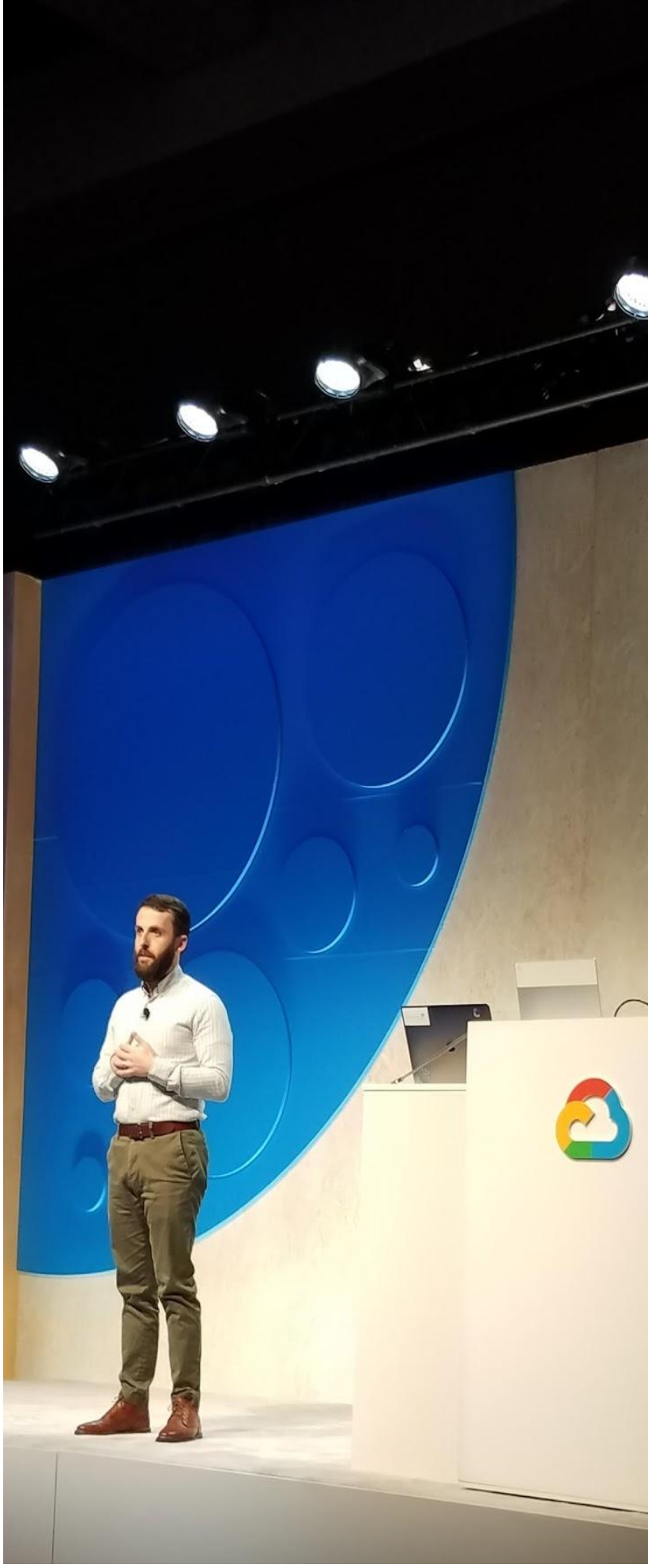
To accomplish this, NYC3 adopted a Zero Trust, Zero Touch methodology that uses Google Cloud's BeyondCorp architecture, which removes authorization and access decisions from single points and instead uses context-awareness to authorize users based on their identity. Because it's cloud-native and modular, the data pipeline can be scaled as needed to match network

demands and workflow changes can be logged, applied, and systematically understood by security professionals.

Moreover, Ahern and his team made sure that security would be able to advance faster than the threat. “This is a problem that has to be solved at machine speed, not at human speed. [And when humans are involved],” Ahern says, “we want our analysts to act at the speed of their fastest tool, not be held to the speed of their slowest tool.” To that end, NYC3 has intentionally built their data pipeline for speed and the capability to leverage machine learning and advanced automation.

> *People don’t actually want machine learning, they want learning. They don’t want advanced automation, they want the right thing done as fast as possible. So what our platform enables is for those workflows to be systematically understood, programmatically applied, and repeated at scale.*
>
> - **Colin Ahern, Deputy CISO, New York City Cyber Command**

Bottom line: Security is a top-of-mind issue for Google Cloud as it prepares public sector partners like Ahern and his team to embrace hybrid and multi-cloud computing environments. That was made clear in multiple announcements throughout the week: from the addition of Access Approval and Event Threat Detection capabilities in its **Cloud Security Command Center** platform, to the inclusion of Context-aware access in BeyondCorp architecture, and its **Policy Intelligence** beta that uses machine learning to automate policy enforcement and reduce risk -- it’s evident that Google Cloud is taking itself seriously when it says “your data is your data, and no one else’s.”



Pictured: Colin Ahern / NYC3 Deputy CISO

Pictured: Jennifer Lin / Director of Product Management, Google Cloud

2 Google Cloud's versatility and open architecture meet agency demands for interoperability

A foundational cloud platform should ensure success, security, and scalability across a diverse range of missions. In spite of this, many agencies continue to rely on outdated, disparate legacy IT systems to run their most critical applications, and because of this dependence are unable to take advantage of the wealth of data now available to fulfill complex mission requirements.

To that end, CEO Thomas Kurian said Google Cloud dedicated the last year to solving three fundamental concerns shared by many agencies:

- ➔ *First, how do you do you modernize in place without having to jump completely to the cloud?*
- ➔ *Second, how do you bridge incompatible architectures while you transition?*
- ➔ *Third, how do you maintain flexibility and avoid lock-in?*

The answer to these questions: Anthos.

Anthos enables public sector agencies to realize all the benefits of hybrid and multi-cloud environments, while ensuring them the security and scalability they need to perform their mission. As Kurian said in his announcement, Anthos will run not only on Google Cloud's open-source Kubernetes Engine (GKE), but also on-premises so that agency customers can deploy, run, and manage any of their applications with choice, either on-site or in the cloud.

Moreover, for the first time ever, Anthos provides agencies a cloud-agnostic foundation, meaning that workloads and applications can easily migrate across Google Cloud onto other third-party cloud platforms as needed, including AWS and Azure.

The impact of this on government operations can't be overstated: it opens up new possibilities for collaboration across agencies and departments, the ability to accelerate mission conversations, as well as the ease in shifting workloads to scale with new policies, mandates, and security requirements. Plus, the announcement of **Knative**, an open API and runtime environment, will also bring agency developers a serverless experience that enables greater workload portability anytime, anywhere.

In another big nod to government users, Google Cloud **unveiled new partnerships with seven of the top open source providers** (a group that includes Elastic, Confluent, and MongoDB among others), which gives federal, state, and local users the benefit of fully managed cloud services, a single user interface to manage apps, unified billing in a single invoice, and unified support that removes the need to deal with multiple, different providers. The open source announcement is expected to strengthen existing federal open source projects like Code.gov and Data.gov, which were created out of the Federal Source Code Policy, and further signifies that Google Cloud is serious about nurturing an open-source ecosystem in government that turns one-provider models into a thing of the past.[2]

> *Anthos gives you the flexibility to move on-prem apps to the cloud when you're ready, and it allows you to keep using the technologies you're already using while improving security.*
>
> **- Thomas Kurian, CEO of Google Cloud**

Pictured: An attendant observes a public booth demonstration held at Google Cloud Next '19

3 To combat data overload and boost enterprise intelligence, agencies leverage Google Cloud's smart analytics

The U.S. government is racing to address what amounts to a data explosion: an unending stream of information from multiple outlets, across multiple locations, at all hours of the day. To make sense of all this data, it needs tools that can manage it securely and deliver insights that meet mission needs and enhance the citizen experience.

To see how one government agency is harnessing analytics for increased intelligence in the cloud, look no further than **Colorado's Department of Transportation (CDOT)**. Like those in other states, Colorado citizens in metropolitan areas had seen their average commute time spike to 4 hours per day due to greater rates of road congestion. Under such trends, traffic injuries and fatalities increased in the last few years, reversing years of steady decline in road-attributed mortalities.

Instead of building more roads to address this congestion, CDOT revised its approach to a data-centric philosophy in pursuit of intelligent transportation, using Google Cloud analytics to study weather data, traffic data, roadway conditions, community feedback, and many other data sources. The combined aggregation and analytics of this data enabled CDOT to understand fundamental questions such as how traffic changes over time, what alternate routes can be utilized, where congestion is expected to peak, and where the most trafficked roadways can be located.

Integrating Google Cloud analytics tools like Cloud Dataflow and BigQuery, CDOT created the Data Analytics Intelligence System (or DAISy), a cloud-based platform providing applications for traffic management, automated public messaging, vehicle-to-vehicle communications, mobility on demand, signal monitoring, and prediction of winter weather operations.[3]

Google Cloud Applications and efficiency with G Suite are transforming the DNA of the government workplace 4

While all that sounds like it requires deep technical expertise, Google Cloud wants agencies to know it's already taken care of that. In fact, as the United States Postal Service (USPS) discovered, **you don't need to be a data scientist** to use or benefit from Google Cloud's smart analytics, machine learning, and artificial intelligence tools.

> *Zero agencies in the federal government were using cloud-based email when we started. The technology piece is the easy part, but the hard part is organizational change management. We had to be very intentional about the partner we chose, and we chose Google."*
>
> - **David Shive, CIO of General Services Administration**

Dewayne Whitfield, Technology Innovation and Product Strategist for **USPS**, spoke about his journey of bringing the power of Google Cloud's Dialogflow to others in his department. Dialogflow is an end-to-end, build once-but-deploy-everywhere development suite for creating conversational interfaces for websites and mobile applications. Without machine learning experience, Whitfield learned Dialogflow by watching free YouTube tutorials and then met with program owners to share his insights and understand their goals.[4]

The product of his team's prototyping led to creation of a Smart Portal Assistant and Smart Postal Kiosk that harnessed ready-made natural language processing code to field commonly asked questions citizens had related to mailing forms, delivery times, and other USPS services. It also allowed USPS to rapidly accelerate the onboarding process for new customers through a virtualized experience immediately upon sign-up.

A common theme that surfaced again and again at Next was how Google Cloud is transforming the government workplace.

The **General Services Administration (GSA)** is one of Google Cloud's longest partners in the federal space: its migration of 17,000 GSA employee accounts to FISMA-certified G Suite reportedly cut half of the agency's mobile workforce costs, saving them $16 million. David Shive, GSA's Chief Information Officer, sees Google Cloud as a 'lever' which has helped his agency reduce the number and complexity of applications in their inventory, while allowing them to focus on mission first: helping the rest of government buy, build, and use technology in pace with modern advancements. By uniting enterprise functionality and shrinking the number of distinct email platforms from 17 to just one, G Suite has been critical in the maturation of GSA's Emerging Citizen Technology Program which aids 300 federal, state, and local partners in their technology needs.

The State of Wyoming is also benefiting from the G Suite revolution. Prior to migrating their 10,000-member workforce over to G Suite, Wyoming's IT enterprise was disconnected and siloed, devoid of any centralized visibility or management. Former CIO Tony Young and Former Governor Matt Mead spoke on the record at Next, and both recall that on top of the complexity created by 13 different email systems, their agency was running dry when it came to collaboration with other departments and jurisdictions.[5] They needed something new and something flexible.

The adoption of G Suite enabled those like Young and Mead to do things they'd never done before, such as Gov. Mead using Google Hangouts to livestream a State of the State address from Bahrain (where he was visiting troops over Thanksgiving) to constituents across the globe back in Wyoming. G Suite collaboration helped them as they built a 100-gigabit backbone to connect all the

government buildings and schools in Wyoming. And it's been instrumental to their work in creating the Jackson Hole Global Technology Summit that draws innovators from around the world each year.

Asked for his advice on how other agencies can follow Wyoming's example, former Gov. Mead doesn't mince words: "When you make this shift, you have to recognize that people get attached to what they're using. You have to take the time to train, to demonstrate, and time to provide time because it doesn't happen overnight. If you want to use this technology, be an example. Start with government: do it yourself and do it the right way. There was a chain reaction after we did it that enabled others to catch on."

5 *Google Cloud's partnerships can help states and cities save lives*

But Google Cloud doesn't just drive efficiency like those seen at USPS and Wyoming; it's also saving lives through smart partnerships with both public sector organizations and top innovators from the private sector.

For example, Google Cloud and Deloitte have partnered to launch **Opioid360**, a real-time virtual dashboard service whose mission is to understand the scope of risk of addiction to opiates. It's sorely needed at a time when 130 Americans lose their lives to the opiate crisis every single day.[6]

"We on the frontlines who are taking care of patients are data-poor," says Meera Kanhouwa, Managing Director of Deloitte Consulting and a veteran physician with extensive experience treating opioid victims. "These people do not have primary care, they can't be seen on a routine basis, virtual health isn't deployed, they don't have access or transportation or money to get there."

Kanhouwa, her team, and those at Google Cloud wanted to build a solution that could better identify those patients at risk so that medical providers could offer interventions in time to save lives.

By the Numbers:

- **2.4M suffer from Opioid Use Disorder (OUD)**
- **47,000 opioid-related deaths reported in 2017**
- **The total economic cost of the opioid crisis in 2015 was $500B**
- **Only 20% of people suffering from OUD are able to access treatment that is proven effective**

Pictured: Thomas Kurian / Chief Executive Officer, Google Cloud

Watch on-demand keynotes and government sessions from Google Cloud Next '19 in the full playlist here.

Opioid360 provides critical stakeholders the real-time information needed to make live saving interventions. From public health and legislative officials to law enforcement officers and emergency medical responders, Opioid360 can help get the right insights into the right hands at the moments that matter. With the benefit of these datasets and analyzing multiple variables (financial health, social determinants, housing situation, distance from medical facility), providers can actually determine which patients are at greater risk of addiction, even if there are no perceptible differences in appearance or pain symptoms.

To understand to what extent machine learning (ML) and predictive models make their model accurate, Deloitte and Google Cloud reached out to a midwestern state that was deploying its own rules-based analytics model (without ML) for the same problem. When they compared, they found that the state identified 15% of the target population that was susceptible to opioid addiction, with a 50% error rate, and that it took 9 months of runtime until the system had enough data to generate a prediction about individuals. By contrast, the machine learning tool developed by Deloitte and Google Cloud identified 85% of those susceptible to addiction, with a 10% error rate, over a period of just 4 months.

“Opioid360 holds the promise of potentially being that solution from the data science community that can make a life-saving difference for those on the front line,” says Sean Conlin, Principal at Deloitte Consulting.

Google Cloud’s partnerships demonstrate their commitment to tackling real-world issues that affect the lives of everyday Americans. For more information, case studies, and videos showing how Google Cloud is working with health providers in the public sector to deliver life-saving capabilities, click **here**.

For more information on how Google Cloud can help your organization achieve digital transformation, please visit cloud.google.com/solutions/government.

Pictured: Software engineers participate in Google Cloud Next ‘19 Bootcamp

ENDNOTES

1. NYC Cyber Command. https://www1.nyc.gov/site/cyber/about/about-nyc-cyber-command.page
2. Federal Source Code Policy. https://sourcecode.cio.gov/
3. CDOT: "Technology Peak Projects: Celebrating CDOT Successes." Dec 10, 2018. https://www.codot.gov/business/process-improvement/strategy-3-peaks-1/technology/technology-peak-projects
4. Google Cloud: "Customer Stories: Leveraging Pre-trained and Custom Machine Learning Models (Cloud Next '19.)" Video. Published April 11, 2019. https://www.youtube.com/watch?v=XXwnwv6t-tI
5. Google Cloud: "How Wyoming is Transforming Government With G Suite (Cloud Next '19)." Video. Published April 22, 2019. https://www.youtube.com/watch?v=lNo8f3eLPYE
6. NIH: "Opioid Overdose Crisis." Revised January 2019. https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-crisis

Google Cloud

Google Cloud is widely recognized as a global leader in delivering a secure, open, intelligent, and transformative enterprise cloud platform. Our technology is built on Google's private network and is the product of nearly 20 years of innovation in security, network architecture, collaboration, artificial intelligence, and open source software. We offer a simply engineered set of tools and unparalleled technology across Google Cloud Platform and G Suite that help bring people, insights, and ideas together. Customers across more than 150 countries trust Google Cloud to modernize their computing environment for today's digital world.

Learn more at **https://cloud.google.com/**.