

# BNY MELLON CLOUD MODERNIZATION WEBINAR: TRANSFORMING THE FINANCIAL INDUSTRY

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**Barbara Cooper-Jones, Ginnie Mae – Chief Information Officer**  
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## **Frank La Salla**

Greetings, everyone, and thank you for attending our webinar today. I'm Frank La Salla, the CEO of Issuer Services at BNY Mellon, and I have the pleasure of moderating today's panel, which we're hosting in person and virtually from BNY Mellon's New York headquarters. Our in-person audience is following social distancing guidelines, which means we're appropriately spaced across the auditorium, and thank you all for coming today.

I'm joined by an esteemed panel of clients and colleagues for which I hope will be a very timely and insightful conversation about cloud modernization and adoption. In this webinar, we will highlight the collaborators behind successful cloud migrations, the risks involved in not updating cloud technology, and discuss why these initiatives are shaping the digital transformation of several institutions across the government and financial sectors.

And this conversation is especially topical given the billions of dollars that the US Government and other governments have earmarked towards cybersecurity and technology modernization efforts in the current infrastructure bills and additional bills to follow. We're seeing an increasing number of institutions, including ourselves at BNY Mellon, leverage cloud computing to enhance security efficiency and scalability. In addition, enhanced data and analytics capabilities are being integrated into our financial solutions. In fact, at BNY Mellon, we continue to extend our growing portfolio of emerging technology capabilities, and one of the many ways we're doing this is through collaborations with multiple cloud providers such as Google Cloud, AWS, and Microsoft's Azure, respectively. So, we can give a broader array of services, and deliver the best experience and customized solutions according to all of our clients' needs.

We also serve as a strategic collaborator to help our clients achieve their own cloud migration journeys. We're involved in a multi-year strategic project with Ginnie Mae and Deloitte to migrate Ginnie Mae's legacy applications from its current data center to a centralized AWS cloud environment, which we'll hear more about today.

So, without further ado, I'm excited to introduce our panel. To my left, we're thrilled to have Barbara Cooper-Jones, Senior Vice President at the Office of Enterprise Data and Technology Solutions at Ginnie Mae. Barbara brings more than 25 years of experience in transforming information management environments, including long-term partnerships with business and technology stakeholders. In her current role, she's responsible for defining and developing enterprise-wide strategies to ensure the ongoing and future alignment of Ginnie Mae's operations and technology across the enterprise business model, and all business operations. In addition, Barbara is also working to define and develop strategies for all mortgage loan MBS-related technology and data management related design activities. Prior to joining Ginnie Mae, Barbara held senior roles at the Federal Reserve Bank of Richmond and Fannie Mae. Barbara, thank you for being here. We're thrilled to have you.

Next we have Alex Colmenares, a technology fellow and certified architect at Deloitte Consulting in the Government and Public Services practice. She has over 28 years of IT consulting experience, leading federal clients through projects focusing on cloud and on-premise IT infrastructure modernization and operations, systems integration, cybersecurity application operations, and more. In her current role, she works closely with Ginnie Mae's technology team, application owners, external vendors, and AWS solutions architects to design, architect, and manage a smooth transition of Ginnie Mae's systems to AWS's GovCloud. Alex, it's a pleasure to have you with us.

Next, we're joined by Ralph Groce. Ralph is the Chief Information Officer for Issuer Services here at BNY Mellon. Ralph is responsible for application development, technology strategy, and support for the Depositary Receipts and Corporate Trust businesses. Over the course of his career, Ralph has mastered a broad range of design capabilities, including commercial and investment bank operations, sales and marketing technology, and entrepreneurship. Ralph, glad that you're with us today.

And finally, joining us virtually, we have BNY Mellon's Chief Information Security Officer, Jeff Lunglhofer. As CISO, he is responsible for defining, building, and operating a very elaborate enterprise-level cybersecurity organization. The security organization collaborates with a wide range of internal and external clients to securely enable new technologies and drive innovation across BNY Mellon's platforms and services. Previously, Jeff led the Cyber Financial Services practice at the consulting firm of Booz Allen Hamilton. During his 18-year tenure with Booz Allen, Jeff provided cybersecurity services and enterprise to a wide range of financial institutions, as well as other commercial and government clients. Jeff, thank you for being here today as well.

So, with 100 years-- that was a long intro, by the way. So, with over 100 years of experience between us, I think we should just get right to the questions.

So, Alex, maybe you can help us break the ice a little bit. You've helped many clients in their cloud migrations, and have experience working with multiple cloud providers like Google, AWS, Azure. Can you share what are the benefits of migrating to the cloud, and what are the drivers behind why companies are deciding to do it?

### **Alexandra Colmenares**

Sure, Frank, thank you, and thanks for having me here. So, there are multiple reasons why companies will go to the cloud. I think that the top three, to make it a little easier, are the agility that nowadays companies need to go to market. Secondly would be security. It's a-- the cloud right now has invested a lot of money in implementing security into their infrastructure, and cost for infrastructure. In order to be able to do what you need to do nowadays, to be agile, you need very robust infrastructure, and it becomes very costly to build those data centers at that level, and at that rate.

So, you take advantage, really, of infrastructure that is shared, but it's shared in a manner that is secure, and you can grow by having more agility into your organization. So, basically, you can create applications that normally will take you two, three years, in a month, because you also use managed services. A lot of these cloud service providers have tools and have applications already built in that you can use, and we use, without having to build it on your own, and that allows you to go to market quicker, and that's one of the reasons why a lot of companies will go to the cloud.

### **Frank La Salla**

So, Alex, just to summarize what you said, are companies just realizing it's about reduced cost, speed, and security? I mean, are those the three drivers around—

### **Alexandra Colmenares**

I would say that those are the top three drivers to be able to go to the cloud, or to choose to go to the cloud, and in the old school data centers, it normally takes many months to years to build something, and if you need to actually interconnect with someone else, it may take even longer, and everything else you need to do to make sure that you have security built in. The cloud, and the cloud companies and service providers made such an investment these days, so that you can take advantage of those secure connections, you can take advantage of those predefined APIs, and you can actually deploy quicker and be able to interconnect with other agencies or other companies, other financial institutions, in a matter of months as opposed to years.

## **Frank La Salla**

Right, that's great. So, Barbara with that backdrop that Alex gave us, can you just share with us Ginnie Mae's journey, and obviously, with you at the helm there in terms of driving the technology agenda, what were the drivers? Like, what was it that made you realize this was something that you really needed to do?

## **Barbara Cooper-Jones**

Well, thank you, Frank, and I would be remiss if I didn't start at least by thanking you, Frank, Ralph, the Bank of New York Mellon, the Corporate Trust team for supporting Ginnie Mae in every single thing that we do. We maintain a \$2.1 trillion book of business, you all take care of our securitization platform, and so with that, your question, Frank—

## **Frank La Salla**

By the way, I did not ask Barbara to say that. Just for the record. Thank you, though.

## **Barbara Cooper-Jones**

I don't get the opportunity to say it often. But our cloud journey, interestingly enough back in 2010, OMB released its Cloud First guidelines, and that was a mandate from the federal government, and that mandate basically said that if you are embarking on an innovation and transformation initiative, you must consider cloud. So, we took that very seriously as a mandate.

At the time in 2010, we were not cloud ready. So, the first thing we had to do was to define a cloud strategy. We had to look at every single application to determine if it were cloud enabled, or if it could migrate to the cloud. And if it couldn't, we would have to put specific measures in place to allow it to be able to migrate to the cloud. We also had to look at our platform environment. We didn't have a lot of virtualization in our environment. So, we knew that without that, a migration would be extremely difficult. So, there were a number of what I'd call pre-migration activities that we have to embark on, and we did them very diligently, and we were very strategic in how we did that.

We also looked at our platform environment itself. At the time, we had two primary data centers, and we had two disaster recovery sites. With four sites, it's very difficult to consolidate your platform. It's very difficult to understand real-time what is happening in that platform. So, the number one driver was obviously the government's mandate to be cloud first, and now obviously, that mandate has morphed over time to be cloud smart. The federal government has released those guidelines. The second thing was to consolidate the infrastructure, so that we could fully understand what was going on in our platform. The third thing we wanted to do was to be able to prepare for innovation, more so than we had in the past. We have a modernization program that has been very successful. The bank has been very strategic in helping us with that. But we also knew that the platform was 50 years old, and so one of the things that our peer and I wanted to do was to ensure that we had a platform for another three to four decades. And so the question is, if you're looking that far in the future, what do you look-- what is that foundation that you're going to build on? What is that platform? And so, cloud was the solution.

And then the fourth thing was around agility, which Alex had mentioned. We have robustness in our platform and our program scales. But one of the things, or really two things we wanted to achieve more was agility and speed, and so when you look at what the cloud vendors have done, and what those cloud solutions offer today, the speed is there, the agility is there, and we wanted to completely leverage that for our go-forward platform.

## **Frank La Salla**

That's great. No, that's interesting, and I guess, Barbara, that sort of begs the question that I want to ask Jeff, and Jeff, look, as our CISO, CISO for BNY Mellon, which is a G-SIFI, right, we're globally significant in the marketplace, when you think about the cloud, what are the things in terms of security or cybersecurity, security in general, that folks need to consider when they're making that decision or that leap into the cloud from data centers that they own, they feel like they control, it's within their-- everything is within their remit, if you will? What do folks need to consider when they think about the cloud?

## **Jeff Lunglhofer**

Yes, it's a great question, Frank, and I would start out by saying, and echoing what Barbara just said. If you're a small company, a start-up, a new company, or you're looking to future-proof, modernize your platforms, what makes sense? Investing hundreds of millions of dollars in data centers, and equipment upgrades in hardware and software,

that might be a good solution in some particular instances, but frankly, if we have a start-up that we're rolling, if we're rolling a new product out, the speed, the agility, the flexibility of configuration of the cloud environment is really going to beat out almost any traditional infrastructures that you can build.

And the way I like to think about it, though, and there are some risks that go with that, if you think about it, cloud equals agility, listen to everything that we've just heard so far, agility, speed to market, flexibility, easy interconnect. All of these are really great buzzwords. If you're a technologist and you're building new capabilities, the flags are going off in your head, this is great, this is what we want to do. Let's take this forward and use this new technology. There's risk that goes with that. The speed at which configurations can be changed in the cloud is incredibly high velocity, much quicker than running through a change control process, and changing the firewalls, and doing all the things that you would do in a traditional infrastructure. One click can fundamentally alter the connectivity state, the access state of a chunk of data for a client who's using the cloud, and that is a serious risk that we do need to consider.

So, I would say on one hand, the cloud offers a pre-baked, pre-vetted set of cybersecurity capabilities that folks can take advantage of. On the second hand, really need to monitor the configurations and have the right alerting and configuration controls in place, because again, you don't want to be that company who makes the click, opens up that storage location to an unknown set of parties, and leaks data. So, configuration control and configuration management, from my perspective, continue to be the number one risk with cloud overall.

**Frank La Salla**

Great, thank you, Jeff. Thanks for that. So, Ralph, let me just take it home from what we've heard so far. How is BNY Mellon integrating cloud capabilities into the way we collectively service our clients?

**Ralph Groce III**

Thanks for that question, Frank, and let me start by saying it's a pleasure to be here with Barbara, with Alex. Our opportunity to participate in what is an historic and strategic initiative is greatly appreciated, and it's not lost on us that we have the opportunity to help you do something that is so far reaching and is so fundamental to the services that you provide to the country, and to partner with Deloitte, something that we typically haven't done in the past, has really been outstanding, an outstanding opportunity, and we really appreciate that.

Frank, you've started off in your opening comments referencing some of the strategic initiatives that we have going on at the bank. They typically center so far around data, and being able, and we've talked about that concept of agility. It applies to data as well, the ability to serve up comprehensive copious amounts of data back to our clients so quickly, so that they can make better decisions faster, so they can make more informed decisions faster, so they can make impactful decisions that are driving their particular businesses, and the value that they are displaying to their customers, their shareholders, their team members faster is something that we are very much engaged in.

We have data analytics projects queued up with Google in our clearance and collateral businesses, we have data analytics projects queued up with Azure in our Treasury businesses, and they are having a significant impact on the quality of the service, and the value of the service that we are giving our customers based upon the data that we can share with them, and share with them with a sense of velocity, a sense of security, and a sense of comprehensiveness that we haven't been able to do so in the past.

Moving to Issuer Services, we are looking to begin to build platforms that are ready to be hosted in the cloud, and that's something that is new for us. We are leveraging the experience that we are gaining from the opportunity that we have with Ginnie Mae, and we look to be able to offer some impactful kinds of capabilities as we move forward as well.

**Frank La Salla**

That's great, and we do have a lot going on. There's no two ways about it.

**Ralph Groce III**

Indeed.

## **Frank La Salla**

Barbara, let me go back. This government segment really is intriguing, and obviously Ginnie Mae is a vitally important agency for the United States, mortgages and what it does for homeownership, and everything else around it. And obviously, from your perch, where you sit, when you look across other agencies, can you give us a sense of what are the modernization trends you're seeing across the government and maybe some other agencies? It's just helpful for us to just know what the trend is in DC and-- I know you've been on the cutting edge of this. You've been a leader in a lot of ways, but what are other agencies doing?

## **Barbara Cooper-Jones**

Absolutely. I'll start out with the C-word "Cloud". They are all talking cloud-- cloud anything, cloud anywhere, everyone is really starting to make that investment, and again, the guidance from the federal government is clear. Reduce your footprint in your data centers, go green IT, go cloud. The security is there. Every cybersecurity mandate that comes out mentions cloud first. So, that's one thing that you're seeing.

On a software development front, there are two aspects that we're seeing that is DevOps, or DevSecOps, short for development, security, and operations. Everyone is looking at that and they're trying to embrace agile. We all know that government has been slow to embrace agile. They're more comfortable in a waterfall type of environment. But they also know that in order for them to meet the mandate that they have to meet, that they have to embrace agile in DevSecOps. So, everyone is talking about that in the software development space.

People are talking digital interoperability and digital transformation. Everyone is talking about that, and finding ways to try to embrace that. Strategy in governance, you wouldn't think that governance is on necessarily the tip of everyone's tongue in the government, but it is. People are trying to figure out what should my strategy be around modernization? What should my cloud strategy be? How should I migrate? How should I modernize? What should those costs be? How can I better manage that cost, and all of the risks that are associated with that?

And I think the last thing really is innovation and transformation. Everyone is looking at that. How can I innovate, how can I modernize, and how can I do it in a way in which I can deliver the services that I need to deliver today, and the services that I need to deliver tomorrow? And if we really look at Ginnie Mae, and you look at the rest of the federal government, we all have many things in common. We all have to achieve many different things for many different people. The government has to do many things for everyone, and the question is, how do you do that? And the only way that you can do it is you've got to focus on people, too, so people are talking about future of work. They're talking about workplace flexibility. They're talking about bringing the best talent and being able to retain that talent. The federal government is always-- I hate to say it, but we are always trying to get the best resource, but you are, too, other financial services organizations. The government cannot compete in that space.

## **Frank La Salla**

By the way, we don't think we can compete sometimes. It's a war for talent, there's no two ways about it.

## **Barbara Cooper-Jones**

And even in the government, we are competing against government sometimes because there are certain government agencies that have the privilege of a premium pay. Ginnie Mae does not, so we're competing against other federal agencies that can pay a premium on pay.

And the last thing, Frank, that I will say to your question is really around innovation and modernization, and how far can you take it? Who can you align with? The partners that you select are so important. Case in point, if I can-- I've probably exceeded my time here, but case in point, we selected a public cloud vendor because it was contractually awarded to someone. We're migrating away from that to a more mature cloud vendor with partners that are sitting in this room, and to my left and to my right, and so the partners that you are choosing to do business with is very important, and the federal government's looking at that across the landscape. Who do I need to have a seat at the table to help me transform my business for the future?

## **Frank La Salla**

Good. Alex, listening to Barbara, it made me think of a question. Just when you meet-- with your practice, you're meeting a lot of different groups, right? How would you assess the maturity level of folks? So, when you walk in, and

you're meeting with people who are either considering the cloud or maybe on their way, already on the journey but need to accelerate it, how would you assess it? Where would you put generally the maturity level of companies' awareness and expertise? Barbara's talking about war for talent, the need to move quickly, technology changes quickly. What do you see out there?

### **Alexandra Colmenares**

So, that's an interesting question, Frank, because a lot of times companies just-- they hear the word cloud is a buzzword, and they want you to embrace it, without really understanding that it's a cultural change, it's an operational change, and you can't just jump into it. So, a lot of times, companies don't realize you have to start from the beginning. You need to do an assessment, which is what Ginnie Mae did, to understand how easy it would be for you to move into the cloud, and then you have to make decisions. Do you take what you have and move as is, do you-- and will it work? Do you do a transformation, and how long would it take you to get to that point? So, there's a number of-- it's sort of a roadmap and that lifecycle that you really need to understand and have a vision for.

So, there are a lot of companies and federal government agencies that want to get there, and they'd realize after one or two trials that you can't just get there from jumping off the cliff. You really need to look at your business operations, understand whether you can embrace it or not, and then make a decision of what it is that you're going to migrate and move towards that, and do it in a roadmap type fashion so that not everyone does it the same way.

In the case of Ginnie Mae, Ginnie Mae decided to move as is, as much as embrace or adopt as many cloud services as possible, but understanding that we are not migrating everything and transforming it at the same time. Other agencies actually decided to do the transformation as they migrate. So, it really depends on the agency, and you need to start by doing a true cloud readiness assessment. That's the most important thing to do, regardless of the cloud provider, because that's the other thing, people think, "Oh, let's just go to this cloud provider or that cloud provider". You really need to understand your business drivers, your business needs, and then go out there and see what's out there that can meet what you need. It could be that this particular business, I mean, cloud service provider can do something better. You need to do major analytics. So, maybe there's one cloud provider that can do it better than another. So, you've got to start at that level, and that's one of the things that we have been helping clients, is really to understand from the very beginning, what it is they need to do for that journey, and then we can put an implementation plan to help them migrate.

### **Frank La Salla**

Right, so it's got to be well thought out. No, that makes sense, thank you for that. So, Ralph, before we go to Q&A, quick question for you. How will we at BNY Mellon be leveraging the work we're doing with Ginnie Mae, and the migration, for some of our other clients?

### **Ralph Groce III**

So, I think it was earlier this year, or maybe late last year, Frank, we had the opportunity to spend-- the senior leadership team here at BNY Mellon had the opportunity to spend some time with the CEO of Microsoft, and one of the things that he said that really resonated with me, and stuck with me, has stuck with me, was that the transformation of Microsoft really began when they moved from being a company that knew it all, to a company that learned it all, wanted to learn it all, and that's the way we are approaching this experience. An opportunity to learn, an opportunity to leverage, an opportunity to partner and gain from that partnership in ways that aren't necessarily generic to us. And not just learn from Deloitte and Ginnie Mae, but learn from some of the other businesses within BNY Mellon that are already on that journey.

We are building a new Global Debt Issuance platform, and it is our desire to ensure that that platform is, at the very least, cloud enabled and cloud ready. So, we're thinking about how we future-proof that, and the cloud is a way to do that. We are talking about digital and the digitization of debt issuance, and how we can, again, leverage the cloud to accelerate that, again, future-proof that.

So, these are things that we're doing within our organization. Look, we're in the trust business, and we have to earn the trust of our customers every single day. We get to do what we do because we've earned that trust. We're also in the value business, we're also in the utility business. We have to create value for our clients, we have to create value for our shareholders, we have to create utility for our team members, and the cloud enables us to do that.

And so, again, this is a great learning experience for us, and it's not lost on me, it's not lost on our team members, the opportunity that exists before us to leverage this experience, and to build upon this experience for the betterment of our clients, the betterment of our team members and our shareholders, and we're doing exactly that with some of the new things, new programs that we have underway.

**Frank La Salla**

OK, no, that's great. So, I don't know if we have any questions coming in yet, but if not, we can keep going-- in the room we have some? Or in the room here? Should we-- do have any questions in the room? Does anybody have any questions before I...? No? Yeah, you had your hand up? Yeah, go ahead.

**Question**

I guess I can just speak loud—

**Frank La Salla**

No, go to a mic because folks outside the room-- we've got more people outside the room than in.

**Question**

Fair enough. As Barbara, you and Alex have said that you are on this journey for cloud migration and modernization. I'm just wondering, Ginnie Mae obviously is on a path, but you have partners as well that are working with you in the federal government space. Are they also, I mean, a part of this journey as well? Are you talking to them, your other agencies that deliver collateral to you and whatnot, are they a part of this journey as well? Are they as advanced as you are? Just maybe talk a little bit about where some of your other partner agencies are in the space? If you can.

**Barbara Cooper-Jones**

Yeah, so let me start with the MISMO organization. And for those that do not know what the MISMO organization is, it stands for the Mortgage Industry Standards Maintenance Organization. They are the governing body for mortgage standards, and we've worked very closely with the MISMO organization for many years. MISMO works with originators, with lenders, you name it, across the ecosystem.

One of the things that we will be doing with the MISMO organization as it relates to our transformation journey, they will be one of our senior advisors, they have a relationship that is, probably, I think it's first rate with everyone across the ecosystem. They have their ears to the ground; they have many communities of practice. One of their most recent ones is their ESG practice, and so we are joining those communities of practice as well. Our standards that we're rolling out now will be MISMO-based. As we go forward with our transformation next-gen program, you'll hear more about that in months to come, where we will be fully leveraging MISMO.

We are also very closely aligned with FHA and VA, Federal Housing Administration Veterans Affairs. They obviously deliver securitized loans on our platform, VA more recently has been about 41% of our portfolio, and the major growth in the program since 2019. There are other agencies as well, we share lots of notes. There's much broader work for Ginnie Mae to do across our ecosystem. We're really looking forward to that work. Everyone knows last week a potential nominee for president went before the Senate for her confirmation hearing. We're hoping, we're excited about that choice. We're looking forward to having a president, and I think once we have a president in place, we'll be able to move even faster than we have in the past. So, good alignment across the ecosystem, and we're looking forward to continuing to see where that journey takes us.

**Frank La Salla**

That's great. Well, before I go to the virtual question, I want to make sure we had Jeff's audio back. And Jeff, I did want to go back to you on a follow-up question from earlier. And that was, I wanted-- the first question I asked you was about risk of going to the cloud, but I wanted to flip the question on its head and say, what are the risks of not adopting cloud modernization? How do you think about that?

**Jeff Lunglhofer**

Yes, great question. So, I would say there's really two answers. One is if you're an organization who, for whatever reason, sort of refuses to embrace the cloud, that of course is going to ultimately put you, I believe, in a severe technical and economic disadvantage as we move forward. I think there's no question that the velocity at which cloud

capabilities are evolving and growing, and you would be somewhat foolish to bury one's head in the sand and say, no, we're going to stick with our traditional infrastructure in our data centers, and things like that.

Two, if you look at the pace at which security controls are improving within the cloud, and I'm talking cloud native security controls, so analytics capabilities, I think Alex mentioned that earlier, cyber analytics capabilities, some of the consoles to monitor for cyber activities and alerts that we're seeing emerging now from Azure or GCP, AWS, all the big players, they are rapidly catching up and/or exceeding some of the traditional cyber analytics capabilities that companies are familiar with, and I'm not going to name any specific companies, but there's a few major players, and we're very carefully tracking who gives you better capability with less investment, less time, and less fuss overall, and cloud is outstripping some of those native security vendors.

Identity and access management, that's a huge issue for managing traditional infrastructure with different, diverse identity stores, large numbers of entitlements, management systems, and all the recertification that you have to go through. Cloud native capabilities in that area are, again, rapidly catching up to and/or outstripping the capabilities of our native infrastructure that we have, most companies have access to. So, are you going to spend hundreds of millions, tens of millions of dollars upgrading and modernizing all of your infrastructure internally, or are you going to migrate to the cloud where you can have baked, ready-to-go capabilities that are vetted and tested? Frank, to me, that's a no brainer.

When I think about where we are, even as a bank, at BNY Mellon, or where our clients, major clients, like Ginnie Mae and others are in five years-- three years, five years, 10 years, I see a diminishing footprint significantly for the traditional infrastructure, similar to what are some of the eco-- technology evolutions that we've seen. To me, the next evolution is going to be moving to cloud, and I think overall, without question, we will be more secure for that migration. Let's just be clear on that. There are some issues, we read about it in the papers, there are some risks, but if we do it right, we can be more secure in the cloud. There's no question in my mind.

**Frank La Salla**

Right. Yes, that's great, Jeff. Yes, no, that's very helpful. Really appreciate it, I'm glad we were able to get that question in.

So, Micaela, are we going to go to the-- we have a virtual question. Do you want to—?

**Micaela Christophe**

Yes, this question is—

**Frank La Salla**

And this is going to be exciting, because we don't know who it's for. We're doing this real-time, real live. I hope it's not for me.

**Micaela Christophe**

It's also for Jeff.

**Jeff Lunglhofer**

I vote for Ralph. I'd go for Ralph.

**Frank La Salla**

Jeff, it's you, pal. Sorry, you're on the spot.

**Jeff Lunglhofer**

Oh, all right, OK.

**Micaela Christophe**

You mentioned cloud native security capabilities in your remarks. What are some of the key areas we should be looking at as we think about our cloud journey?

## Jeff Lunglhofer

Great, great question. I actually just mentioned a few in my previous remarks, but I'll run down the laundry list of controls that I think about when I think about how we, from a BNY Mellon perspective, migrate to the cloud, and also, as I'm having conversations with Ralph and Barbara and others about how can we do this in the most secure way possible, and take advantage of all those cloud native controls. I'm going to give you a roll-up of some of the key things that I focus on, and then end with a key point here.

One, I mentioned it earlier, cyber monitoring and analytics. I will tell you that from a spend perspective, a tech spend perspective for our traditional security plan, our analytics and alerting capabilities cost us an enormous amount of money, and an enormous amount of expertise required to continuously maintain and monitor. So, every single major cloud provider has their own inherent analytics and cyber analytics and alerting platform. Look at those, investigate those, make sure those are integrated and baked in for every application that you're moving in. You want to see that single pane of glass, what's the cyber health of my infrastructure in the cloud, and be able to monitor it, and have your folks that run your security operations able to monitor that continuously.

Identity and access management tools, very powerful in the cloud. One word of warning here, for anybody who's thinking about this journey, it can be overwhelming. And look at the number of roles and entitlements that are available in any of the major cloud providers, Azure or GCP. It's thousands and thousands and thousands of them. You really need to think about them in terms of groupings. What are the right role and entitlement groupings that should go with the right roles that we're establishing for us as a company, and for this capability? Don't try and choose your own adventure across 5,000 entitlements. You will make a mistake if you do that. So, think about roles.

Privileged access is another big one, and again, every major cloud provider has a tool, integrated cloud native capability that they can bring into play in order to securely allow your more privileged folks to connect to and monitor and configure the environment.

And then really the configuration change management, that's a huge one, and there are a host of internal tools and third party tools that can continuously monitor a cloud tenant and identify if there are any changes made the configuration that would deviate from the policies that you've set. We use those extensively at BNY Mellon, so our security operations team is alerted instantly if somebody makes a change to our internet connectivity, they make a change to the access controls that are there, we get an immediate alert, we're informed of it, and we can open an incident and trouble ticket, and make sure that something hasn't happened to degrade, unintentionally or intentionally degrade, the security of our ecosystem.

And then I'm going to go ahead and throw the last key point in here, and this is something that we've explored extensively at BNY Mellon. If you have an infrastructure, and many of us will, that will straddle the gap between the traditional infrastructure and the cloud infrastructure, there's a real opportunity to double the controls that you have in place by using a mix of traditional integrated controls on-premise and external controls that can provide, again, cloud native privileged access and all these other tools.

My recommendation is that you use both for some period of time. You can use different identity sources; you can use different privileged access tools. It is slightly more complex for the administrative staff and the folks that have to work with the technology. But think about it. You no longer have a single point of failure. If you have an issue with one particular tool, you have an immediate option that you can roll to, and some subset of your infrastructure is separate and isolated from a controls perspective. So, a really, really important potential benefit. If you engineer and architect correctly, you can really have a huge benefit, and I'll tell you, that's something we are looking at very closely for some of our own internal cloud journeys and migrations that we're rolling out of BNY Mellon. Saying, hey, if one of our controls breaks, if there's an outage, if there's a security issue with it, we can roll to a cloud native control in almost no time at all, or vice versa, back to an internal traditional control almost immediately, and that gives us a great, significant boost when it comes to resiliency and security.

So, that's the last point on that and I'll turn it back over to the room.

## Frank La Salla

OK, Jeff, thanks for that. Appreciate it. Micaela, let's take one more question before we wrap it up, OK. I'm conscious of time.

## **Micaela Christophe**

Sure, and this question is for Barbara and Ralph. Can you share any notable wins that you've experienced as you've undergone the cloud migration journey?

## **Barbara Cooper-Jones**

OK, we shouldn't overlook *winds*?

## **Ralph Groce III**

*Wins.*

## **Frank La Salla**

Wins or, you know, any new business or any opportunities that might open up.

## **Barbara Cooper-Jones**

Um... Oh, several. I'll share one and then I'll hand off to Ralph. One of the things that our acting executive vice president asked us to do recently, and specifically me, and one of my peers was to define an analytic vision for Ginnie Mae, what is our analytics vision? The reason he asked us to define that is because he also has the Office of Strategy and Operations underneath him, and he wanted to ensure that policy-driven decisions are made based on data and analytics, and not just based on someone's gut reaction on a certain topic.

And so, in this analytic vision that we defined, and we gave it to him about a week ago, we defined that our next-gen transformation program, which will be a cloud-based platform and solution, should be the catalyst for that vision. The analytic vision itself is not the catalyst. There has to be a catalyst for that vision, and so we think it's our next-gen program, and that will be cloud-based. So, that is a huge, huge opportunity for us. We cannot even embark on our next-gen platform, which would be, again, a transformation, think of it as Ginnie Mae for the next three to four decades. That's how you need to think of it. We cannot embark on that without cloud, and so we're putting that infrastructure in place today, so that we can further build on it for tomorrow. So, that is a huge opportunity, and being able to explore analytics, so that it is the basis for our policymaking decisions, is also quite paramount for our organization. Ralph?

## **Ralph Groce III**

And so you heard from Jeff, who has been an amazing partner with us through this journey, and as he's talked about security, some of the strides that we've made in both understanding our security posture, understanding the tools associated with what we were trying to do, and how that's all going to be rolled out, and then the actual implementation of a strategy, and execution on that strategy, has really been very enlightening, very encouraging, and very forward-thinking in terms of moving the org-- not just this program and this project, but moving the entire organization forward with regards to how we're going to leverage the security capabilities in the cloud, and harness them and marry them with the security posture that we have within BNY Mellon. So, we're making great progress and great strides on that, and it's been fabulous to be able to partner with Jeff on that.

## **Frank La Salla**

Great, great. Well, all good things must come to an end, so we're going to have to wrap it up.

I want to thank our audience here, the much bigger audience that came in virtually. I want to give a real thank you to the support team, the whole events team, Cara, Micaela, Erin, Marielle, the whole team, we couldn't do it without you. There was a lot of work done over the weekend, a holiday weekend at least here in the United States, folks worked in overdrive. And obviously I want to give a very special thank you to our guests, Barbara Cooper-Jones, Alex, Ralph, Jeff. Jeff, we're glad you were able to make it, albeit virtually. It was good to hear what you had to say.

And look, we're just beginning on this journey. I think we're going to do this again. It's a new frontier for a lot of us. We're all learning and feeling our way through it. I'm sure that the environment will be very different three years from now, maybe even a year from now than it is today. It's evolving quickly, but that's what makes it exciting, and I think it's going to change the way we all do business and the way we operate. So, more to come, we're going to stay close to it as Bank of New York Mellon. We're going to stay close to our partners. And I want to thank Barbara from Ginnie Mae, and obviously Deloitte now and everything you've done, and the whole team.

So, with that, I wish everybody a really great day, and a good rest of the week. Thank you all, thanks.

**Barbara Cooper-Jones**

Thank you.

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