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The Deloitte On Cloud Podcast

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Title: **Ginnie Mae's cloud journey: Strategy and communication are driving success**

Description: For Ginnie Mae, or the Government National Mortgage Association, moving to the cloud was a new experience that was technically and culturally challenging, but ultimately successful. In this episode, David Linthicum talks with Dan Boling, Ginnie Mae's chief technology architect, about their journey to cloud. From Dan's point of view, success involved strong communication, driven by a sound cloud strategy with continuous testing and pilot projects. Culture change, governance, and strategic advanced planning also played a big role.

Duration: **00:23:29**

David Linthicum:

Welcome back to the On Cloud podcast. Today on the show I am joined by Dan Boling, Chief Technology Architect at Ginnie Mae. Dan, welcome to the show.

Dan Boling:
Yeah, thank you. Thank you. I'm glad to be here.

David Linthicum:
Yeah, great to have you here because I think one of the things we always give priority to is people who actually make this stuff work out in the field. It's one thing to write about it and speak about it, even talk into a microphone about it like I do sometimes, but talking to people who actually are out there fighting the fight and making this stuff work in the real world is really kind of data points that we like to prioritize here, so thanks very much for joining us on the show.

Dan Boling:
Absolutely. There's always the "what I learned in a book," and then there's always the real life, and it's more about real life than it is the book, and real-life experience is quite a bit different.

David Linthicum:
Yeah, I always find that I straddle both worlds. It always works in the book and on PowerPoint but rarely in real life. It's never that easy. You have to go through budgetary issues and technological challenges and people challenges and all the things it takes to build these things and bring value back to the business. So, tell us about yourself. How'd you get to where you are right now? What have you been focusing on in your career, and maybe something that you've accomplished that you're very proud of?

Dan Boling:
Sure. So, it started—my career in technology itself started a long time ago in 1989. Went into the US military, served in the Navy for a little over six years, started in the Navy in technology, in electronics, and of course followed the regular course path for most of the IT guys coming out of the Navy. Went into DOD and worked for DOD for a while, worked in the law firm arena for multiple years as a technology director and technology manager and network and operations and multiple hats. Then moved back into the private sector—or I would say public sector. Worked for Metropolitan Police Department as their Deputy CIO, and now I'm here with Ginnie Mae as their chief technology architect.

David Linthicum:
How long have you been with Ginnie Mae?

Dan Boling:
I started with Ginnie Mae in 2013.

David Linthicum:
Wow. Long time. Sounds like a great career. You worked a number of jobs and probably got a good lay of the land at what it takes to make this stuff work, would you say?

Dan Boling:
I've worked in many different areas from the corporate side and not having the critical budget restraints that you have on, say the Metropolitan PD side where you're very budget-restricted, to the federal government where it's—the budget cycle is planning everything a year or two or three prior to actual getting the work done. So—it's very—it' a change in landscape on how to operate.

David Linthicum:
Yeah, I deal with both worlds, and I've got to context switch all the time. The budgetary latency, some of the stuff is just something you have to plan for, ultimately just kind of built in what you do. So, what's your favorite thing about your job right now?

Dan Boling:
It's hard to say what the favorite thing is. The fact that we're—that I'm able to work for an agency that is not behind the times in technology, that they are supportive in moving the agency forward and following the advances in technology. I've worked in many other organizations in the government, out of the government, quasi-government where if the funding's not available they just lag. It's hard to get the funding and technology is moving so fast now it's nice to work with an agency, and for an agency, that actually is advancing and wants to take on that new technology.

David Linthicum:
Yeah, it's much better. I've done both, and one I require some advance planning, and the reality is we switch technology directions and different best practices emerge over time, so it's very difficult to plan ten years ahead, so some of these large contracts that get awarded, when delivering on them, you're having one vision of technology at the time of award, but something that's completely different when you actually implement the stuff, so that can be a little frustrating at times. So, let's talk about your migration experience and we'll talk about complexity of migrations. When you move from legacy systems into the cloud environment as you did large projects as you worked there, what was your experience in doing that?

Dan Boling:
It was a net new experience moving a legacy platform into cloud. There's a lot of complexities that aren't—when you move into an organization and the platform has really been existing for many years, and being able to dig through that platform in the legacy and get it prepped and ready to move to the cloud takes a lot of planning. The older technologies are not built for cloud, they're not cloud agnostic, they're not using cloud-based tools. Some of them do not function well. There's some technologies there are special things you have to do, and if you take cloud out of the picture and just do virtualization,

one of our first steps in our planning and moving into the cloud was to virtualize everything that we had and prep it. Because cloud is really just virtualization. It's just new operational model. So, planning, getting everything ready, and virtualizing the platforms in the first step, and then the—where we move these legacy applications into cloud. Then during the migrations, exposing some of the intricacies of the legacy platform in a severely modified and integrated legacy platform that some of the cloud environments just would not support those legacy environments.

David Linthicum:
So, as you went through the planning process, I kind of like this as a preparation for moving into the cloud, you did some virtualization, almost some slight refactoring and reengineering of the systems at the platform level before you relocated it into the cloud, so you're just moving machines—VMs into the cloud. Is that a good summary of it?

Dan Boling:
Just about, yes. There was a lot of strategy around it. New federal policy came out that we had to follow, data center consolidation and then cloud first, and being a disparate data center model and being able to collapse and then get them ready for cloud, it was the big strategy effort up front and then, yes, get everything virtualized, get it prepped for cloud, know what actually could be moved to cloud and what absolutely could not be moved to cloud because when you start walking that path, you'll quickly find that there are things that may or may not work in cloud. There are vendors that will push you to move to their cloud-based product and not their traditionally install-based product, and not all clouds are the same.

David Linthicum:
That's absolutely right. I love that. In fact, we did a survey last year on the future of cloud stuff, looking at how people were successful and not so successful with cloud computing, and those that did exactly what you did and did some upfront planning and some investment into understanding their existing applications and preparing the platforms to do the relocation in the cloud were much more successful than those who didn't, so you'd be applauded for that. So, as you prepared the agency to move into cloud, lots of cultural changes, lots of technical changes, specifically moving to a pay-as-you-go consumption model and also some of the ops model changes. What are your experiences there?

Dan Boling:
It is a long effort. We'll say it's a long effort. A lot of up front what we did was planning around financing and deploying a financial management platform that we could report on the cost of a cloud-based product where it was a pay-as-you-go. So, moving into it, we have—as we stabilize the environments in cloud, we were able—we're now able to provide that up-front cost to the individuals on the pay-as-you-go service, and it was a lot of planning to make sure that we could provide that up front. But the operational model, it's not just within your agency.

It's also your support groups that have to understand that the pay-as-you-go model affects multiple areas: changing your operational hours, changing your environments, collapsing environments, and on the back side of that is ensuring that everything maintains compliance, that you're not only compliant with the operation, you're compliant with the contractual requirements. Pay-as-you-go across the board, it is a different operational model. The more information you're able to provide your departments that you've been providing the services to, the more upfront planning you do, the better you can move into that model to support all of those different—all of your different customers within your agency I'll say.

David Linthicum:
So, is this a training challenge, or was a cultural change challenge, or was just kind of an evolution that occurred naturally within your staff?

Dan Boling:
I think it's there's a little bit of both. We had some learning. It was—yes, it happened naturally as part of the course of operations, and some of it we had planned for, some of them are lessons learned. More information up front that you can provide, the better off you are. Some of it was we absolutely briefed that these are—your costs are going to change, the operations are going to change. One of the big benefits of moving into cloud is in the traditional data center model and the traditional procurement model is you need to add servers or software, you had to go through a procurement operation, and it takes months. Sometimes it could take a month, sometimes it's six months, sometimes it's a year. And in cloud, what we've seen—when we first moved in—the first step into virtualization, instead of taking months—multiple months to provide say servers and databases, it was down to days. And then moving into full support production cloud, it's minutes.

So, what we saw is the operations groups thought—in their mind, it was, well we can—now I can—instead of doing one project at a time, and they're in series, I can run 30 projects at once because the infrastructure's able to spin up operations so quick that it's—I can put my request in today and by tomorrow I've got all of the infrastructure services I need to push my program forward.

And while that is true, we are still—there's still operational things that have to be in place. You still have your regular operational policy, you still have your architecture reviews that have to be done, you still have to do budget reviews and budget planning. So, getting that information out, we probably should have gotten it out a little bit sooner so they knew what to expect. So, it was a learning lesson. The more information you can provide up front, the better off you are, and the more the program and project teams will understand the actual process. And of course, the cloud and automation, it makes—it takes the onus off the infrastructure team and it allows the operations teams to—once it's authorized, to be able to do their own infrastructure. It's a different model that they—once they were into it, it was like, oh wow, this is different. Now we put the request in your ITSM, and within a day I've got approval and I can spin my infrastructure up.

David Linthicum:
Yeah, my friends, my CIO friends call an abundance of choice and an abundance of speed, which is kind of a different model than it was just a few years ago, and there's advantages and disadvantages to that. The advantage you just mentioned, you can get the infrastructure you need pretty much instantaneously, in a few minutes, sometimes a few hours, sometimes a few days, depending on if you have internal approval processes, things like that, but, also, you can build up a cloud infrastructure that's able to generate a pretty big cloud bill sometimes, so you have to kind of keep an eye on that and have governance. I

guess that's where the whole FinOps thing is growing around putting discipline and accountability around those things. So, what was it like moving from multiple data centers, physical data centers into a single cloud? What were some of your experiences there?

Dan Boling:
Part of it, moving from multiple data centers into virtualization was fairly easy. Virtualization's been out for a long time. I think the hardest part was getting them to understand that it's still in a data center somewhere, that it's just virtualized on someone else's infrastructure, it's just a different model of computing, but we're virtually doing the same thing. It's just virtually and it's managed in somebody else's infrastructure. We're no longer responsible for the facility. We're no longer responsible for the power bills and ensuring that we have five-nines reliability on the infrastructure that supports all of your computing. So, it's a different—the business model changed, and it took them a minute to understand that.

But moving from multiple data centers into a single cloud is so much easier to manage when all of your applications are being provided by one source or being supported—your infrastructure is being supported by one source. You're not worrying about all of the inner connectivity of multiple data centers and the latency that you have transferring large amounts of data or just operating across a WAN. With everything in one single cloud—and we say it's in a single cloud, but we've got multiple cloud providers, and we're integrating with multiple cloud services—that I'm no longer responsible for deploying a full application stack and utilizing one that's already deployed and it's already secured, and I just have to add the connectivity into our environment. So, it's a completely different, for us, moving from a single and multiple data centers, on the infrastructure and operations side, it's a completely different operational model. But again, it's so much easier to manage when you're in one source of infrastructure.

David Linthicum:
So, it sounds like consolidation really kind of led to simplification for you. In other words, in moving things to a single cloud—moving—kind of removing the powers of the cloud and all the reason we want to do that and near-unlimited scalability and changeability and all that stuff, but the ability to kind of move from multiple domains into a single domain was a key differentiator for you. Is that a good way to say it?

Dan Boling:
Yes, moving from multiple domains into a single was a key differentiator, but we had to keep in mind that not all clouds are the same. There are—with your legacy platforms, there are cloud providers that can support things and there are cloud providers that can't, so there was a lot of upfront work to be done and proof of concepts that were done to test out the different CSPs that could really support that consolidated model of all of your disparate legacy applications.

David Linthicum:
So, what about making sure the clouds are able to live up to your expectations? How did you do testing and proof of concept testing to ensure that the workloads would operate in a functional way when they reached the cloud?

Dan Boling:
Right, so the big thing for us was, ensure that all of the operations could be consolidated, number one, because there's a lot of things that we do in our application stack that are time sensitive for delivery. So, we did an effort to research the major cloud providers to try to determine which ones could support the technology, and then we did proof of concepts for the major application stacks in the disparate clouds to see what tools were available, what types of upgrades we would have to do, what absolutely would not work within that cloud to determine which was the best cloud provider that could support the legacy stack, what could improve our current situation in security, compliance, our operational model that could work with Ginnie Mae's operational model and how we manage our infrastructure.

And then a lot of testing. We built out smaller portions of our application stacks and did proof of concepts, did a lot of testing up front, determined which provider was the best provider. And then once we determined that, then we established each of the environments. We did multiple levels of operational testing, testing all of the different cloud capabilities, testing different versions. We would test one, this would function well, we'd move on to the next. This was more functional, this is a better solution, or this solution for this cloud just doesn't work at all and you had to find a different solution. So, we worked with our providers, we worked with our application teams and our test teams so we could go through and test each of the separate application platforms so we made sure that we could set the base before we went into the actual migration. What tools were going to—what applications, tools could move, and what did we have to adapt to the new tool sets?

David Linthicum:
So, anything that was a surprise that you didn't think was going to be a surprise, either a pleasant or a negative surprise without naming names?

Dan Boling:
I was surprised at how easy some of the cloud solutions were able to integrate into our cloud solution and provide services to the legacy platform. I was surprised at some of the legacy platform and how it—I mean, even in virtualization, where you can virtualize it, was fine but moving into a cloud you had larger issues. I was surprised at the level of infrastructure patching that had to be done to support a dispersed cloud model, being able to support the migration out of a fixed data center. I wasn't surprised at having to go buy the dedicated connectivity for the migration. Trying to migrate over a VPN or internet connection is just not functional. We did a lot of planning up front to test that, but providing dedicated links between your environment and the cloud that you're migrating to vastly improved performance and really made it a successful migration.

Where you're moving large volumes of data, there are—the different cloud providers do provide multiple types of tools for supporting a migration of large volumes of data. And then we worked with our individual providers as we selected technologies and we designed a platform. We worked with the individual providers to validate that platform, so if we were using a deployment of Cloud A into Cloud B, then we pulled Cloud A provider, Cloud B provider in the same room and said, "Okay, we know you've done this before, this is our design, what are the goods, the bads, what are the indifferents, and what can we improve?" And we did that through each of our application stacks.

We brought in the external providers, the OEM providers, to do the validation. We brought in—we worked with other government agencies to do some level of validation to ensure that we were meeting all of the requirements. So, really having that third-party view to assist. Everybody likes to use the term it takes a village. It really takes a village to complete a migration and be successful, and it really did take a lot of hours, a lot of time, and all of our partners and all of our providers came together as a one group to perform this migration. You can't stress enough that it's not Contractor A doing something, Contractor B doing something, Contractor C doing something. It's Ginnie Mae doing something as a whole, and that's I think a big part of our success has been that we operate as one whole.

David Linthicum:
So, say you went back in time before you did the migration and you're able to send a message to yourself saying things that you should do that you didn't do. What would those be?

Dan Boling:
One would be prep the agency more. Talk to the individual—not just department heads but the departments themselves. Do more lunch and learn type things and prepare them for the new operational model internal to the agency. Prepare them for what to expect. Prepare them for, yes, it is easy to spin up all of your infrastructure and be prepared and have things in minutes and days instead of weeks and months and years, but preparing them that it has to be planned up front, that we still have to do a planning and budget cycle, that we have to plan that out because it's still contracts providing the information, and you have to abide by and live by the contracts. So, first would be much more—be much more up front with information and walk the agency through it ahead of time as we go along the migration, so more briefing time.

Two, maybe bring in the OEM providers a little earlier in the actual design sessions. So, instead of just meeting with your partners and doing the design sessions, ensure that you have representatives from the OEM providers of the actual technology. Some of the issues that we were faced with in migration, maybe they would not have been such a big issue had we had the OEM providers in a little sooner during the design phase.

David Linthicum:
That's great advice. Lots of great wisdom. I think that people need to take at the heart, and it sounds like being proactive, starting earlier, planning earlier, kind of taking these steps really kind of leads to success, and we found that in our data that's coming in off the field as well that's reflective of your experiences and what you learned. Sounds like you did a great job making the migration occur. Any plugs, any Twitter accounts or LinkedIn accounts that you want people to follow to learn more about you?

Dan Boling:
I am on LinkedIn, it's Daniel Boling, B-O-L-I-N-G.

David Linthicum:
Well, make sure you follow Dan because he's got a lot of great wisdom on how this stuff goes. And I'll tell you what, it's people out there like Dan who are actually making this stuff work and working the hard problems on the back end that are allowing cloud to succeed or any kind of project level to succeed and also dealing with the pragmatic limitations and opportunities and benefits of cloud and looking at it in a realistic way, in other words, what are the good things, what are the bad things, what things need to be dealt with, how can we change our processes and best practices to best accommodate successful migration to the cloud.

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