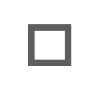
**Transcript**

July 18, 2025, 3:02PM

 **Raja Karumanchi** started transcription

 **Kommuri, Venkata** 0:05  
Oh, I don't know why my screen it is off of my screen.  
OK.  
Uh.  
OK, that's fine. It's OK with me. I mean, I can, I can handle that. Do you see full screen now?

 **Raphael Titus** 0:22  
No.

 **Lei Shi** 0:23  
No, you're moving it back, so.

 **Kommuri, Venkata** 0:26  
Now.

 **Lei Shi** 0:27  
No.  
Now now we see it but but you can double click on the title screen of that window will maximum no it's gone.

 **Kommuri, Venkata** 0:36  
I did. I did. Oh, it looks like there's a second monitor. I'm in the office, so I think there are two monitors here.

 **Raphael Titus** 0:40  
I think.  
Right.  
Maybe disconnect from your main desktop. I mean sorry display the other display just use main PC.

 **Kommuri, Venkata** 0:48  
So.  
Yeah, that's what I've learned.

 **Raphael Titus** 1:09  
Yep, yes, in the teams.

 **Kommuri, Venkata** 1:14  
I see my screen now.

 **Raphael Titus** 1:18  
Yes.

 **Kommuri, Venkata** 1:19  
OK.  
OK, today's discussion is about the application architecture deep dive session. What we're gonna cover in this is gonna discuss your overview of the guiding care application architecture.  
Discuss current challenges, application portfolio assessments, any.  
Pick you can pick you know one or a couple of components in application for Dr. implementation and see and are there any improvements we need to do when it comes to Dr. you know planning.  
So these are these are the items I'm gonna cover in today's meeting. Um.  
Application architecture team, please go ahead and share your application architecture and can you explain the the all the components of the guiding care application?

 **Vidya Sambasivan** 2:40  
Is Lynn in the car? Lynn or Jacob, do you want to drive this?

 **Lynn Crumbling** 2:44  
Yeah, I'm trying to. I'm loading a PowerPoint at the moment.

 **Jacob Leblanc** 2:49  
Yeah, when I know you have yours, I wasn't prepared to share anything at all, so I know when you go at least have that diagram you've gone over before.

 **Lynn Crumbling** 2:56  
Yeah, I I wasn't either, but that's that's fine. Like I said, I'm uploading a PowerPoint. It's it's all good.  
Just give me a couple minutes to kill off a debugger or two.

 **Kommuri, Venkata** 3:08  
Yeah, no problem. Take your time if you want to bring up your diagrams from your you know.  
And some shared locations.  
Well, I'm gonna stop my screen.

 **Lynn Crumbling** 3:42  
8.  
My machine is just completely hungry right now.

 **Vidya Sambasivan** 4:27  
Do you want the GC architecture diagram, Lynn?

 **Lynn Crumbling** 4:30  
Yeah, yeah, if you have it.

 **Vidya Sambasivan** 4:45  
Rafael, did you have it handy?

 **Raphael Titus** 4:50  
I just put it in the chat. Uh Venkata, would you mind sharing your screen and just click on that link that I put in the chat?

 **Vidya Sambasivan** 4:50  
Have good luck.

 **Lynn Crumbling** 4:50  
The.

 **Raja Karumanchi** 4:52  
Yes.

 **Kommuri, Venkata** 4:55  
Yeah, sure, yeah.

 **Raphael Titus** 4:56  
That's a prod diagram that was shared before.

 **Kommuri, Venkata** 4:59  
I I can't really open it because I'm not. I don't have enough permissions. Can you put it in a slack channel and open it?

 **Raphael Titus** 5:09  
Yeah.

 **Lynn Crumbling** 5:15  
She.

 **Raja Karumanchi** 5:23  
It uh.

 **Kommuri, Venkata** 5:25  
Oh, you are sharing it, OK.

 **Raja Karumanchi** 5:25  
Lynn.  
Then you can go ahead. I I got it.

 **Lynn Crumbling** 5:33  
OK. So we have the concept of customer instances and we have the concept of interfaces to guiding care, which would be data that's coming in or data that's going out.  
So everything that you see in the center of that diagram with the stack, with the ingress, the presentation, the API and the data, that's that's an instance of guiding care. That's a set of applications that the customer that's customer facing.  
The three main portals, if you will, the three UI's that the user can log into are the main guiding care portal, which is, you know, that's that's basically the face of guiding care. When people think of guiding care, they think of that main portal.  
We also have a portal that providers can log into, which is called the Authorization portal, and we have a provider that members can log into. So those those are the three web applications.  
Um, those are. These are all.  
Behind a HA proxy load balancer. So most of our customers have somewhere between 2:00 and 4:00 nodes all running and we use HA proxy for that. Then going down to the API layer we have around I want to say 4040 to 50 API.  
That support the the the product. Um. There's also a rules engine that is used to automatically trigger things happening when certain rules are matched. Um, that's.  
Currently being it's a third party company called FICO, but we're in the process of actually writing our own rules engine. That's a drop in replacement for that. So FICO's implementation will be replaced with our own going down to the database layer of course.  
Our main database is on MSSQL. We also have read only replicas for virtually all of our consumers. That's I believe done. What's the layer that that's done on Mark?  
Um.  
I'm sorry.

 **Marc Kaplan** 7:59  
I'm sorry, which segment one?

 **Lynn Crumbling** 8:01  
The the read only replica that that was brought in when we switched over to Hyperflex I believe.

 **Marc Kaplan** 8:10  
Hmm.

 **Lynn Crumbling** 8:11  
Anyway.

 **Marc Kaplan** 8:11  
I don't think it mattered for the stack. I mean, you're talking about the AG clusters for SQL, right?

 **Lynn Crumbling** 8:14  
Yeah, Yep.

 **Marc Kaplan** 8:17  
OK.

 **Lynn Crumbling** 8:18  
We also have the concept of a Redis cache, and in some cases the customer actually gets their own replicated database because Tableau needs its own its own copy rather than having Tableau talk to our main guiding guiding care database server.  
It uses a replicated copy. Now as far as document storage goes, So what we've talked about is for data storage. Document storage is actually separate. Customers can have one of two options there. It's either backed by regular file share storage, SIF storage, or it's.  
Using an interface that we call doc IO, which is essentially an API front end to BLOB storage up on Azure. So they would use one of those two for document storage.  
They don't. They don't really know the difference. It's it's just a selection in the back end for configuration, so.

 **Chris Falk** 9:17  
When is doc IO an application that HealthEdge maintains or is that a third party product?

 **Lynn Crumbling** 9:22  
Yes, that is our application. It's essentially just an API layer that sits on Kubernetes that it pulls its metadata from Cosmos DB and then the actual binary data is pulled from BLOB. So yeah.

 **Chris Falk** 9:25  
OK.  
Sure.

 **Lynn Crumbling** 9:38  
Yep. What else? So that's that's when we talk about a customer. Sure.

 **Chris Falk** 9:45  
Sorry, quick, quick question. Sorry to interrupt on the on the file shares you mentioned. So you you mentioned SIF shares is is that the only sort of network file storage that is is in the guiding care landscape?

 **Kommuri, Venkata** 9:47  
OK.

 **Lynn Crumbling** 10:03  
I want to say yes. So we use SIFS sometimes for actually hosting the application, so the application is loaded off of there and the SIFS mount.  
Is actually on each of the application nodes, but also for document storage. But in terms of what's that?

 **Marc Kaplan** 10:23  
Yeah.  
That that's not true. So we've got, we've got two scenarios, Chris. One is, is that we have a legacy VNX that is fronted with sifs. The only thing that sits in there is the the IIS configurations, libraries and other things like that.

 **Chris Falk** 10:33  
Mhm.

 **Marc Kaplan** 10:41  
We have a second component which is called Pure UDR and Pure UDR is leveraging a mock S3 bucket with net BIOS pathing in the code to get to the documents of the customer. So there's two different solutions right now.

 **Chris Falk** 10:58  
OK, so that mock S3 bucket is essentially speaking S3 API for some sort of an on Prem shared storage.

 **Marc Kaplan** 11:03  
As far as I'm aware, yes, that is the case.

 **Chris Falk** 11:08  
OK.  
Any NFS anywhere?

 **Marc Kaplan** 11:14  
No.

 **Chris Falk** 11:14  
OK.

 **Lynn Crumbling** 11:17  
So when we talk about an instance of guiding care, a Customer facing instance, that box of those four different layers is that instance. And most customers have three instances, so they have a QA instance.

 **Chris Falk** 11:18  
Thanks.

 **Lynn Crumbling** 11:33  
Pre prod or UAT, whatever you want to call IT instance and then of course production. In most cases the pre prod instance and the production instance are identical on on purpose, so the same number of nodes, same configuration.  
Um, yeah.

 **Kommuri, Venkata** 11:50  
So I have one quick question. So these APIs are deployed in Kubernetes cluster or is it on a a standalone server?

 **Lynn Crumbling** 12:03  
So everything that you See there for an instance is deployed on Prem except for the actual document repository that lives up on Azure and Kubernetes.

 **Kommuri, Venkata** 12:16  
Oh, OK.

 **Lynn Crumbling** 12:16  
So this is all all of our all of our hosting is on Prem at the moment for the actual instances.

 **Kommuri, Venkata** 12:24  
All the APIs are on Prem. Are you using any Kubernetes on Prem Kubernetes or no?

 **Lynn Crumbling** 12:30  
No, no, we don't have on Prem Kubernetes.

 **Kommuri, Venkata** 12:34  
OK, so these are actual wrapped up and deployed using, you know, what kind of technology is that? Is that Java or.net or any other, you know?

 **Lynn Crumbling** 12:49  
Most of our stack is.net. It's a combination of.net framework and.net 8.

 **Kommuri, Venkata** 12:52  
OK.  
OK.

 **Senthil Ramasamy** 13:02  
And then uh, quick question about the database piece. Uh, the read only replication.  
I got the information that is in SQL Server native always on you know replication is that the read only serves any any application traffic like any app read from the read only cluster, I mean the secondary one.

 **Lynn Crumbling** 13:10  
I.  
Yes. So we did introduce a configuration into the main guiding care portal to be able to pull data from the read-only replica. I'm not sure whether that configuration is turned on.  
I think it's turned on for FICO, FICO jobs, and I think that's probably it. OK, so we are, we are using IT for a very minute amount of things at the moment.

 **Raja Karumanchi** 13:41  
Yeah.  
Yes.  
Yes, Lynn.

 **Lynn Crumbling** 13:55  
Mostly the overnight jobs, the overnight jobs that run to be basically do sweeps again at the end of every day and update update things based off like our rules.

 **Senthil Ramasamy** 13:56  
OK.

 **Lynn Crumbling** 14:12  
Oh, right

 **Senthil Ramasamy** 14:12  
Understood and the 2nd replicated DB for Tableau, how that is replicated? It's the same technology from the SQL Server database.

 **Lynn Crumbling** 14:14  
Hey.  
Out.  
Yeah, I believe they're just using AG groups for that. Do you know for certain, Mark? I don't See Jawad on the call.

 **Marc Kaplan** 14:28  
There's not there. There's no AG groups or anything related to replication, whether VPN or for BI.  
It's just it's just my it's I I forget what the heck we're using technology wise, but the tables necessary for BI are then shifted over from the production database from the read only node and it's one single node of SQL.

 **Lynn Crumbling** 14:52  
OK, OK.

 **Senthil Ramasamy** 14:52  
Yeah.

 **Kommuri, Venkata** 14:55  
Is there any front end for ruling FICO ruling? Normally they have RMA rule manager or something like that, right?

 **Lynn Crumbling** 15:04  
Yeah, the so the rules engine, some of them are maintained by customers and some of them are maintained by us.  
We.  
I don't. I don't think that's Customer facing at all, if that's what you're asking.

 **Kommuri, Venkata** 15:22  
Yeah.

 **Jacob Leblanc** 15:23  
We do. We have 6 users, 6 customers that use RMA to manage the roles. They do. They do that themselves and the rest are managed through a Phyco Blaze Eclipse plug in by our GPS organization.

 **Lynn Crumbling** 15:30  
They do OK.

 **Kommuri, Venkata** 15:30  
Uh.  
OK, they they.

 **Jacob Leblanc** 15:40  
And that's all I'm moving over to a new where basically we have a new UI, a new front end that's being written called Rules Designer that manages rules in a different form. We're basically just shooting for like feature feature parity with.

 **Lynn Crumbling** 15:48  
Yeah.

 **Jacob Leblanc** 15:56  
RMA and Feiko Blaze. So we have our own rules engine that we're deploying and we have our own rules designer which is a front end that is gonna be used right now. We have 6 clients that are running that new rules engine and just this within the last two weeks the GPS organization.  
Started using Rules Designer to manage those rules, our our own UI application. So that's that current state. They're they're hitting a few bugs and we're working some things out, but that's like in the process of getting rolled out.

 **Kommuri, Venkata** 16:27  
Normally they have a rule repositories, right? Do you have those repositories here in the back end?

 **Jacob Leblanc** 16:31  
Yeah.  
Yes.

 **Kommuri, Venkata** 16:35  
OK, so you do we store them in the same what? What kind of version control? Normally they support version control and as well as databases. Do you use a version control or a database for storing rooms?

 **Jacob Leblanc** 16:49  
We use and in terms of like where the the rules are stored and we are pushing new versions. We just implemented like a a way to like tag versions and deploy specific versions sort of managing versions like more specifically, but we don't have a database for our rules at all.  
Everything is done using um git.

 **Kommuri, Venkata** 17:11  
Get version controller. Yeah, that's itself is a. It's a pretty big system because I I had walked on rules engine for almost 10 years with Pico rule engine. So Dr. for this on itself is.

 **Jacob Leblanc** 17:12  
Yep.  
Hmm.

 **Kommuri, Venkata** 17:27  
A little complex. You know you have a version control system, you have rule templates and application, UI application and rule engine, yeah.

 **Lynn Crumbling** 17:41  
Yep. And the game plan is to have most of that replaced, I believe. Is the target the end of the year, Vidya or or Jacob?

 **Kommuri, Venkata** 17:42  
OK.

 **Raja Karumanchi** 17:43  
No.

 **Jacob Leblanc** 17:54  
That is the target, yeah.

 **Lynn Crumbling** 17:57  
So ideally we want to be completely out of FICO by the end of the year and be using our own implementation by then.

 **Kommuri, Venkata** 18:03  
OK.  
Oh, OK.  
Is this going to be in scope for migration the rule engine?

 **Raja Karumanchi** 18:10  
Oh.

 **Jacob Leblanc** 18:16  
Migration to AWS.

 **Kommuri, Venkata** 18:18  
Yeah.

 **Jacob Leblanc** 18:20  
Yeah.

 **Kommuri, Venkata** 18:21  
OK.

 **Lynn Crumbling** 18:26  
Um.

 **Jacob Leblanc** 18:28  
By the way, the rules engine is that is a Java um web service. Um, the the new one that we're writing, yeah.

 **Kommuri, Venkata** 18:31  
Yeah, yeah, apply.  
Apply on Linux, right? Linux.

 **Jacob Leblanc** 18:39  
Yep, Yep, that's right. We just deployed on on, you know, VMS. It's not like containerized or anything. Yeah, anyway.

 **Lei Shi** 18:48  
I I I have a two questions. One is in this diagram on the top left there there is a well frame from the name. It seems like another application from health edge right? Is that integrated chat is like a create sort of a dependency or like a latency required? Probably not right just to your presentation.  
Is there any tight dependency between the two?

 **Jacob Leblanc** 19:12  
It's not a very tight dependency. So the way chat, we do have tighter dependency in other areas which are maybe not. I guess you could file it under customer API integrations, the one right above that because we also have.  
You know, guiding care makes calls. So yeah, Wellframe is a is an application owned by Health Edge that allows, you know, members to interact directly with care managers and care managers to manage. So it's like a digital member experience for members for targeting for high-risk members.  
So we do have an integration where this API calls made from Wellframe to guiding care and then the other way around. The chat specifically is what we do is we just launch a pop-up window that just launches the Wellframe UI within the pop-up window.  
Window and then there's some very loose integration just at that client UI level to like what does it use the post message API to like like if you want to like populate a chat message from a template from guiding care into the chat window, we have like a way to do that, but that's all client side stuff that happens.  
Um, through like post message API in the browser. Um, but yeah, it's a very loose kind of chat integration there. There's no API calls going back and forth.

 **Lei Shi** 20:35  
OK, so as long as the privately networking reachable, it won't be a very heavy chat. It's all about on demand call from wireframe, right?

 **Jacob Leblanc** 20:47  
There are calls that go from guiding care to well frame and then the other way around. It's not for chat specifically, but um.  
Yeah, that, you know, that's something we'll have to make sure works, um, in terms of being able to to reach the APIs publicly.

 **Lei Shi** 21:06  
Got you. So another question is in the whole diagram is is that true that only the bottom outbound data that that box is like hosted on Azure, everything else is on Prem?  
Since you have like a multiple area like the inbound data, outbound data and also the four box in the center is your client instance. So is that only outbound data is hosted on Azure?

 **Lynn Crumbling** 21:34  
Right. The so, so far all we've talked about really is just the instances themselves. We haven't really talked about everything else. We can, we can talk about outbound data. So that's, yeah, so.

 **Lei Shi** 21:46  
Sure. OK, go ahead. Yeah.

 **Lynn Crumbling** 21:49  
Right now, the way that works is the Guiding Care database is queried for changes, so it uses change tracking on the Guiding Care database in MSSQL and there's a program that runs that once a minute to check to see if there's any new data and then.  
Inverts any changes into messages and pushes those out to the the Azure Service Bus topic that right now lives up on Azure.  
So yes, the the process that actually picks up changes runs on Prem, but it delivers the data to the Service Bus topic on Azure and then the customer retrieves the data from the Service Bus topic.  
Now with us getting off Azure, there's been discussion as to what what happens to that. It kind of seems like what we'll end up doing is converting that over to a red panda topic. That's my my my guess at the moment, but we still have to have a lot of discussions about that because.  
It is going to cause our customers to have to change things on their side as well.

 **Kommuri, Venkata** 23:00  
And.

 **Lynn Crumbling** 23:00  
So that's.

 **Chris Falk** 23:01  
And just for for our team who's not, if anyone's not familiar with Red Panda, that's essentially a managed Kafka, right?

 **Lynn Crumbling** 23:06  
It's it's it's a wire compatible replacement for Kafka, yes, yes.

 **Chris Falk** 23:10  
Yeah, I heard Ted mention that was a possible direction he could go, so.

 **Lynn Crumbling** 23:16  
Yeah.

 **Kommuri, Venkata** 23:17  
So out of these databases, what are critical databases and what are noncritical databases?

 **Lynn Crumbling** 23:18  
So.  
Um.  
I'd call all of them critical.

 **Kommuri, Venkata** 23:32  
OK.

 **Jacob Leblanc** 23:32  
Yeah, unfortunately it's more of a monolith database for the most part. So you know, we have that read only replica, but it's still necessary. We would document repository, that's absolutely necessary.  
The Redis cache, yeah, all that's yeah, we don't like have like separate. It's not a microservices deployment or anything where we have all these little databases around. It's just clients generally have one giant database that hosts everything.

 **Lynn Crumbling** 24:04  
So then the the other piece of outbound data is outbound faxes, letters and authorizations. So essentially that's that's pushing.  
That's pushing data to a third party for fulfillment. So for example, outbound letters, there's a vendor that connects to our SFTP server that retrieves outbound letters and then processes those and sends them out to customers. Same thing with outbound faxes, they're delivered to an SFTP server.  
AP Server, a vendor retrieves those and pushes them out.  
The inbound side is is much more complex, so I've I've divided this up into two two different types of inbound data. There's batch and then there's real time. Let's talk about batch first.  
So our batch process, so when we talk about this, you'll hear it called data loads. Generally these are happening at night time and they're files that are pushed to us again to an SFTP server from the customer.  
We pull those in through a pipeline, do some processing. There's an intermediate Mongo database that things get loaded into, and then some more processing from Mongo pushes those out into our MSSQL database.  
That's all orchestrated using Apache Airflow, so that as one process finishes, another another process automatically starts up.  
The real time data there's got.

 **Kommuri, Venkata** 25:44  
Is is there is there an impact? Is there an impact if this process is down right for maybe for a night? Is there an impact to the actual main portal or authorization portal?

 **Lynn Crumbling** 25:59  
If batch loads don't occur, then our data does not match other systems in the customer's enterprise. So for example, our system is not the source of truth for data like patients, for data like providers, doctors.  
Pharmacies, hospitals, things like that. We're not the source of truth for claims. So let's say a customer's last name gets updated. Maybe they get married and their last name gets updated. We don't get that data load. Now the new name is not present in our system.  
So a failed data load means that yes, we're we're missing important data from our system.

 **Kommuri, Venkata** 26:36  
OK.  
Welcome.  
Is there any, let's say in in our previous meeting with the business team, they mentioned that if if you don't.  
If you don't solve that request for you know whatever the SLAS that you defined, then you had to pay penalties that this process will also applies, I mean applies to that same contractual obligations.

 **Lynn Crumbling** 27:20  
That's a good question. I don't know the answer to that. Did data loads impact penalties? Failed data loads? Are we penalized on that or just for portal downtime?  
8.

 **Marc Kaplan** 27:38  
I don't know about that one. Again, I I would assume yes, because there's regulatory requirements. So if we can't do outbound or inbound to the customer and they have a requirement from the state, they're gonna get penalized. They're gonna penalize us. So most likely, yes.

 **Lynn Crumbling** 27:49  
Here.

 **Marc Kaplan** 27:55  
But we should talk to the accounts team about that.

 **Lynn Crumbling** 28:01  
And just as a side note, when data loads are occurring, the system is very, very, very slow to the point where we it's it's almost some of the systems aren't usable, so.  
We we monitor those. We keep an eye on them to make sure that they're only happening at the right times because.  
Yeah.

 **Kommuri, Venkata** 28:24  
OK.

 **Lynn Crumbling** 28:30  
Any other questions on batch?  
K.

 **Kommuri, Venkata** 28:34  
Do you have currently? Do you have any the replication process exists for this this data the Mongo DB?

 **Lynn Crumbling** 28:44  
I I think the answer to that's no.

 **Kommuri, Venkata** 28:45  
1.

 **Jacob Leblanc** 28:48  
No, there's no replication process. We take. I think the current state of those is we take VM snapshots once a day and that's all that data in Mongo is like mostly temporary anyway, but.

 **Kommuri, Venkata** 28:55  
OK.

 **Jacob Leblanc** 29:03  
For business continuity, I think we do, uh, just take a snapshot that we could restore for the. We could just basically restore the VM if something goes wrong.

 **Marc Kaplan** 29:12  
I I don't think that's actually true, Jacob. From what I remember from the ETL team, because I had, we had quite a few extensive conversations about that. The Mongo databases, the way that the the way that the customers are sending us data, we do have a requirement in some capacity to then retain the data because we get incremental files during the week.

 **Jacob Leblanc** 29:20  
Yeah.

 **Marc Kaplan** 29:30  
So the IT is business continuity for that week. The data though we can ask the data to resend a full file if anything were to happen and be able to reload everything just fine. But we go above and beyond and then take those snapshots so that the customers are sending us deltas. But I think the team like stores like months.  
Worth of data, just just in case an auditor finds something that's a mismatch, we have to go back and find out was it the customer that sent us bad data because we don't have automated solutions to be able to do that today. So we're backing up more than we should or need to.  
Just as a, you know, a CYA moment to say we didn't cause this problem with the data load, you sent us bad data. Does that make sense?

 **Lei Shi** 30:20  
That makes sense. Hi, Hi Mark, about this data store of this ETL. So what's the maximum data that you you will store for like a week, 30 days and how large the data store is?

 **Marc Kaplan** 30:34  
It really depends on the size of the customer. I mean, the default when we do a deploy for Mongo is 500 gigs. I think there's customers out there that have a TB.  
But that's again something we don't have to do because we need to find a better solution for archiving some of that data. So it's cold, but it's really the question of do we contractually have to store that data to be able to validate whether or not it was the customer's file?

 **Lei Shi** 30:48  
Uh huh.

 **Marc Kaplan** 31:02  
That was the source of truth or our data load process broke. Like we need to get away from the notion of having to do that data validation for the customers. We should have some sort of flag that says this came from the file or not and then just truncate all that data. We should not be storing it perpetually.

 **Lei Shi** 31:21  
Gotcha. And another thing, so once MongoDB, the ELT process is complete successfully load the data into the Ms. SQL Server there, is that data going to be deleted on the ELT process?

 **Marc Kaplan** 31:35  
No, no. They still retain it in the Mongo database. Like I said, it depends. They like, they want to keep it perpetually, but we don't have storage to do that. So they work within the quota of the drive that we give them.

 **Lei Shi** 31:39  
For how long?  
OK.

 **Marc Kaplan** 31:50  
And they truncate when necessary, when they're going to hit the maximum of the drive. That's what I'm aware of. Again, we don't have somebody on the ETL team to be able to answer that as of what they're doing today, but that's what I believe they're doing.

 **Kommuri, Venkata** 32:06  
And and is this a Mongo DB is shared across all the clients or you have a a DB instance per client?

 **Marc Kaplan** 32:15  
Typically it's per client. I I think there's maybe 3 or 4 instances where the client is so small that there are shared databases to do that where they do the load. I I I'd have to double check, but I don't think there's many that are shared at all.

 **Kommuri, Venkata** 32:21  
Hmm.  
OK.

 **Lynn Crumbling** 32:33  
And by the way, the SQL Server is the same thing. So there's there's for the most part, every single customer has their own SQL Server. But like Mark said, there are a couple of customers that are so small that they do share a SQL Server, the same thing as sharing a Mongo in that case.

 **Marc Kaplan** 32:50  
Yeah. The only place where that's different is the BI SQL replicated box. Those are all shared for the most part. I think there's only two or three customers that I've dedicated.

 **Kommuri, Venkata** 33:02  
OK, so in this entire architecture diagram, all the components are are basically per customer, right? An instance per customer.  
Are are there any shared components in this architecture? Shared me completely shared me.

 **Lynn Crumbling** 33:14  
3 instances.  
The the document, the document repository is on a shared if if it's sifs it's it's a shared service.

 **Marc Kaplan** 33:31  
Well, documents. So again, operational, operational configuration documents sit in sifts. All customer documents, EM Rs are sitting in Pure.

 **Lynn Crumbling** 33:34  
Well, go ahead.

 **Marc Kaplan** 33:46  
And they're logically segregated by the client, by the instance through the folder structures.

 **Lynn Crumbling** 33:53  
And doc IO is a shared infrastructure.

 **Marc Kaplan** 33:58  
Yes.

 **Kommuri, Venkata** 34:00  
OK.

 **Lynn Crumbling** 34:01  
But otherwise, yes, um, so the.  
The databases, the APIs, the actual web applications, that's all sitting on a dedicated VM for that customer. And in the case of all the environments for the customer, that would be 33 dedicated environments, so.  
Which, like I said, if you're oh, good.

 **Marc Kaplan** 34:25  
Yeah, it's.  
The only, the only, the only thing that you can be assured of that is fully dedicated to the customer is the app servers and the load balancers. That's it.

 **Kommuri, Venkata** 34:27  
So, so you.  
Oh, OK.  
So uh, app servers and load balancers are dedicated.  
To customer, you know one one for each customer. OK.

 **Marc Kaplan** 34:50  
Yes, yeah, it'll be, it'll be, it'll be usually one for the lower environment, one for the upper environment. Well, I should say one for what we call QA, one we call for prod, but then that's that's broken down into then pre prod and prod could share an instance.

 **Kommuri, Venkata** 35:02  
OK, yeah.

 **Marc Kaplan** 35:07  
QA and training and and other dev and other things could be shared as well.

 **Kommuri, Venkata** 35:13  
Yeah. So that means, let's say if we have a 10 customers 10 times, you know, maybe sandbox, Dow, QA, pre prod and prod, maybe 4, right, 10 \* 440 servers.  
Let's say for application servers.

 **Marc Kaplan** 35:33  
Well, let's put it this way. For what's a good example? Customer for this? Trying to think of one. Well, let's just say customer X, whatever. They have QA. They will have. Most likely, if they're small enough, they'll have one load balancer dedicated.  
That has multi instance, which means the configuration allows for routing of the QAURL, the training URL and I think that's typically it. Sandbox is usually not part of their deployment and then when you.  
Look at then the production side of it. Customer X would have a load balancer and 33 application servers hosting what would be UAT, pre-prod and prod in some cases. It's again, it depends on the size of the customer, the number of transactions.  
In some cases we could have dedicated prod and pre prod separated and it's it's it's all it's pretty much all over the place.

 **Kommuri, Venkata** 36:34  
So OK, mix and match. OK, that's it.

 **Lynn Crumbling** 36:38  
If you look at our largest customer, for example, their production environment has four application servers behind the load balancer for production and four application servers behind another load balancer for pre-production.

 **Kommuri, Venkata** 36:54  
OK, so that means you must be having, they must be having the multiple load balancers, right? You need a high availability for load balancer too, right?

 **Marc Kaplan** 37:05  
Well.  
Sure. We sort of got away from that because we were running out of space.  
And HA proxy has been super stable for us, so they only have one load balancer on the front end in pretty much all cases.

 **Kommuri, Venkata** 37:20  
OK.

 **Lynn Crumbling** 37:24  
Lost my.

 **Kommuri, Venkata** 37:25  
So I think Rafael, I just had a question. When we trying to migrate, right, are we planning to migrate these load balancers to AWS ELBS or are you just a?

 **Raphael Titus** 37:36  
That's right. That's right. KLBS.

 **Marc Kaplan** 37:40  
Yeah, I don't wanna bring over HA proxy, so.

 **Kommuri, Venkata** 37:40  
OK, I'll do this.

 **Raphael Titus** 37:43  
Oh no, no, it's going to be LB's.

 **Kommuri, Venkata** 37:45  
Yeah, much better. You know they're all high available and multi AGS and so.  
It's all built in functionality, so.

 **Raphael Titus** 37:55  
Yep, I think that that part, Mark.

 **Marc Kaplan** 37:56  
Well, I.  
Well, the one thing that we do have to talk about with the load balancers though as well too, which again for the Dr. perspective, the load balancers do more than just load balancing.  
So that's kind of a critical problem there where we'd have to look at where in the stack we would then do our ACLS and any other custom rules that we have on those load balancers.

 **Lynn Crumbling** 38:09  
Yeah.

 **Kommuri, Venkata** 38:20  
Yeah, yeah, I think really you can. You can.

 **Marc Kaplan** 38:20  
Oh.

 **Kommuri, Venkata** 38:24  
Yeah, I think Rafael, you can do it right. I identify the ACLs and move it to our ACLs in AWS.

 **Raphael Titus** 38:28  
Yes.

 **Lei Shi** 38:30  
Probably need a a. I'm not sure if it was a session to evaluate all the existing rules to see if this can be 100% to translate into LV rules there and you think there's any we can find equivalent solution? Yeah.

 **Lynn Crumbling** 38:34  
Yes.

 **Raphael Titus** 38:41  
Yep.

 **Kommuri, Venkata** 38:41  
Yeah.

 **Raphael Titus** 38:44  
And we can now, yeah, we can talk about the certificates too at that point.

 **Lei Shi** 38:48  
Yeah, yeah, yeah.

 **Marc Kaplan** 38:48  
Yeah, just let me.

 **Kommuri, Venkata** 38:49  
Are you using any third party firewalls here in this mix?

 **Marc Kaplan** 38:56  
I mean, the only firewalls that are gonna be in front of it are Cisco ASAS or Palo Alto.

 **Kommuri, Venkata** 39:02  
Oh, OK.  
So.

 **Lynn Crumbling** 39:05  
And then of course, well, uh, Health, Health Edge dictates that all of our traffic go through their Cloudflare YF.

 **Kommuri, Venkata** 39:13  
Oh, that is only for web application. That's only for web application, so.

 **Lynn Crumbling** 39:13  
It.

 **Marc Kaplan** 39:14  
And.  
Yeah.

 **Lynn Crumbling** 39:17  
Yeah.

 **Kommuri, Venkata** 39:21  
So is there any firewalls between your presentation layer and APIs and APIs and data and data layer?

 **Marc Kaplan** 39:32  
Well, yes, because there's they're in separate VLAN, so there has to be specific ACLS for the access request.

 **Kommuri, Venkata** 39:39  
OK.

 **Lynn Crumbling** 39:40  
4.

 **Kommuri, Venkata** 39:41  
I think we'll cover that in when when I talk to infrastructure team, you know.

 **Marc Kaplan** 39:46  
Yeah, I mean more, more than networking team, but yeah.

 **Kommuri, Venkata** 39:52  
Yeah, please continue with your real time data.

 **Lynn Crumbling** 39:52  
Yeah.  
OK, Yep. So the last piece of inbound is.  
Real time. So the first thing is customer integrations. So we have a very large amount of APIs that we expose to customers that purchase support for that and they come in through WSO 2. That's our API gateway. The APIs are published.  
And they can be using the APIs to push data to us or pull data from us. Mark, do you want to say anything special about WSO 2? We're we're we're going to get away from WSO 2, right?

 **Marc Kaplan** 40:35  
We just got off the call before this call about WSO 2, so I think we can avoid that for now.

 **Lynn Crumbling** 40:35  
T.  
Excellent. OK.

 **Kommuri, Venkata** 40:42  
When you say pull, pull data, right? So how are they gonna pull it by just calling the API method or or do you have any web sockets here that the server?

 **Lynn Crumbling** 40:54  
Yeah.  
Right. They would just they would be using APIs to retrieve data or to create or update data on our database. So we don't, we don't have any web sockets at the API layer. Yep.

 **Kommuri, Venkata** 41:05  
OK.  
Oh.

 **Lynn Crumbling** 41:11  
And there's those are also subject to penalties, because again, with with integrations, a lot of times what'll happen is they'll they'll have something that automatically kicks off generation of a letter.  
Generation of a fax and regulatory requirements mean that they actually have to have that to the customer within a certain amount of time. So there's API integrations are definitely, they're definitely sensitive.

 **Kommuri, Venkata** 41:45  
So I'm hoping in in this diagram the API receiver endpoints, right? Those are basically you have a a web server, a application server running with the deployed API, right?  
And the processing app is also deployed on the same same instance or is it a completely separate instance?

 **Lynn Crumbling** 42:11  
So the you're when you you're talking about the portal.

 **Kommuri, Venkata** 42:15  
The no inbound data where you have the API receiver endpoints and QDB and processing app.

 **Lynn Crumbling** 42:24  
So the the API endpoints are actually the same API endpoints used by the portals. They're they're shared. Yep, they're they're.

 **Kommuri, Venkata** 42:30  
Oh, OK.  
So you you expose these APIs to external clients too.

 **Lynn Crumbling** 42:36  
Well, they're they're separate APIs that are used by the customers because those APIs will have different foreign keys for the customer to use. So they'll have they'll have a GUID instead of our primary database key, but they're they're on the same.

 **Kommuri, Venkata** 42:45  
Uh huh.

 **Lynn Crumbling** 42:53  
Application the same the same compiled application, it's just different API endpoints that are published that are published through WSO 2 compared to the ones that the web application uses internally.

 **Kommuri, Venkata** 43:00  
Oh.  
So you have a public URLs for them and then you share and then the restricts through IP, IP listing OK.

 **Lynn Crumbling** 43:13  
Yeah.  
I'm I'm assuming we're restricting our WSO 2 calls by IP. Yeah, do we do we restrict WSO 2 calls by IP address? No. OK.

 **Marc Kaplan** 43:22  
Wait, we're WSO 2.  
No.

 **Lynn Crumbling** 43:33  
But yes, they're they're published through WSO 2 to be able to get to those back end APIs that are the same ones that used by the application.  
OK.  
All right, so that's that's APIs. As as we talked about previously, HealthEdge has another application called Wellframe. We integrate with that especially for the chat functionality so that within the guiding care portal you can you can actually see much of the.  
Same information that you would see as if you were logged into Wellframe.  
I don't think there's too much special to note about that other than we do have APIs that that are communicating with with Wellframe and they they pull data from some of our APIs. So it's it's kind of a bidirectional conversation.  
Um.  
ADT data. So ADT data is information about patients going into or leaving or being transferred from some sort of care facility. So a hospital for example there. So ADT actually stands for admissions, departures and transfers.  
So that's that's data coming in from another upstream system. We're ingesting that data and loading it into our database so that it's available from from within our UI. Same thing's true of care payer data.  
So that's that's actually the the the source of record for things like providers and members. It just so happens that another one of the applications that Health Edge owns does that does that functionality. So we have a special integration just for that because it's it's part of our software suite.  
Um, both of those operate through an API endpoint that receives the data, goes into a queue, and then processes. Pretty straightforward.

 **Kommuri, Venkata** 45:38  
They have a clusters for the QDB and you have or is it a short, short load data here in the queue. Once it's processed, you'll remove the data from the queue, right?

 **Lynn Crumbling** 45:53  
Right. That is correct. Yep.

 **Kommuri, Venkata** 45:53  
Oh.

 **Lynn Crumbling** 45:59  
And I feel like in both of those cases, the Q database is the guiding care database, or at least it lives on the same SQL Server. It might be a different physical database, but it lives on the same MSSQL server.

 **Kommuri, Venkata** 46:14  
Oh, that's the same message, OK.

 **Lynn Crumbling** 46:15  
I believe so.

 **Senthil Ramasamy** 46:17  
So it runs on the same instance as the GC database, the main instance, and it's a separate database there, right?

 **Lynn Crumbling** 46:24  
Yes, I believe so. I believe so. I'd need to double check with Anupama on those two, but I'm pretty sure that's the way that's set up.

 **Kommuri, Venkata** 46:25  
OK. Oh, complete.

 **Senthil Ramasamy** 46:34  
OK.

 **Kommuri, Venkata** 46:34  
So how many? Normally how many read only copies do you have? You know?  
We keep now in in the skilled office.

 **Lynn Crumbling** 46:45  
So there's always at least one. I'd have to refer to Jawad for this one, unless you happen to the answer mark.

 **Marc Kaplan** 46:55  
There's only one.

 **Lynn Crumbling** 46:56  
OK.  
Yep.

 **Kommuri, Venkata** 47:01  
So are this backups enabled on all these databases?

 **Raja Karumanchi** 47:09  
Yes.

 **Marc Kaplan** 47:10  
The the backups have to be enabled because Delphix uses the backups to be able to then populate any of the cloned instances, so yes.

 **Kommuri, Venkata** 47:19  
And then you you take the backup and move those backups to other region in case of.

 **Marc Kaplan** 47:26  
They're stored. They're stored locally and they're cross replicated across to the the opposing coast, yes.

 **Kommuri, Venkata** 47:33  
Thanks.

 **Lynn Crumbling** 47:42  
Um.

 **Senthil Ramasamy** 47:42  
I mean that is in addition to the always on you replicate your backup storage to other region.

 **Lynn Crumbling** 47:44  
E.

 **Marc Kaplan** 47:51  
Yes.

 **Senthil Ramasamy** 47:52  
OK.

 **Kommuri, Venkata** 47:54  
Do you have any legal or regulatory requirements for moving data to other regions, you know?

 **Marc Kaplan** 48:03  
Technically, yes, just to be outside of the blast radius if there's ever a natural disaster or otherwise that happens in Northern Virginia or Los Angeles, CA.  
We have to be able to have that data available if we need to restore.

 **Kommuri, Venkata** 48:14  
And.  
Only these two radiates, right?

 **Marc Kaplan** 48:25  
Say that again.

 **Kommuri, Venkata** 48:27  
Only these two regions I can can you move your data to other region other than Los Angeles and Virginia, West Virginia.

 **Lynn Crumbling** 48:37  
Yes.

 **Marc Kaplan** 48:37  
I mean, it really depends on, again, what's in the contracts itself. If there is a stipulation for distance of blast radius, I don't know of that. We just only have Los Angeles and Reston.  
Technically, we wanted to move everything into central US to balance latency and not have to worry about putting customers in specific regions West of the Mississippi or east of the Mississippi. So I mean it's just it is where we are. I don't think there's anything blocking us, but we just have to check the contracts to see.  
What have we stipulated as the the minimum distance between facilities to ensure that the data is safe?

 **Kommuri, Venkata** 49:22  
OK.  
So normally the Los Angeles is the source, you know, source region and the main, the primary region and West Virginia is backup, right?

 **Marc Kaplan** 49:38  
Northern Virginia and Los Angeles are both active for customers, depending on which side of the Mississippi they're on in most cases.

 **Kommuri, Venkata** 49:46  
Oh, OK.  
Let's say in case of an outage, you know how long this main portal and member portal or authorization portal, all these front ends can be down.

 **Marc Kaplan** 50:17  
No more, no.

 **Kommuri, Venkata** 50:18  
But.

 **Marc Kaplan** 50:20  
Four hours.

 **Kommuri, Venkata** 50:21  
4 hours, OK.  
So it applies to all the components in this architecture, right? Four hours for SQL databases, APIs, presentation.

 **Marc Kaplan** 50:31  
Unfortunately, unfortunately, yes, 'cause you can see how tightly coupled these are.

 **Kommuri, Venkata** 50:36  
OK.  
So you don't, you don't define these requirements by component.

 **Marc Kaplan** 50:47  
I really wish we did.

 **Kommuri, Venkata** 51:01  
OK, when it comes to DevOps process right here, do you follow the complete DevOps lifecycle from, you know, CICD process by?  
You know, building and deploying to sandbox 1st and then move to upper region, you know, upper environments and then running some unit test cases.

 **Lynn Crumbling** 51:29  
So we have our own QA environments that are not customer facing and then once it passes QA on those and it gets promoted up to just customer environments, it goes to the QA environment of the customer first.  
And requires customer sign off and then once they sign off on that it goes up to their pre prod or UAT environment. Once they sign off on that, we'll finally deploy it to production environment.

 **Kommuri, Venkata** 52:01  
So you have these pipelines set up. You have separate repositories for each customer, right? Your code base.

 **Lynn Crumbling** 52:12  
You mean repositories for the pipelines?

 **Kommuri, Venkata** 52:16  
Yeah, our pipelines are at a code deployment for each customer, yeah.

 **Lynn Crumbling** 52:20  
Yeah, they have Team City. Team City is used to perform those deployments through pipelines.

 **Kommuri, Venkata** 52:30  
OK.  
Hey your code base is just A1 shared code base or do you have a a multiple code bases? Let's say you have a main portal right? You have multiple code bases for main portal for each customer.

 **Lynn Crumbling** 52:33  
Yes.  
It's.  
We have multiple versions, but one code base. So we we might have some customers that are on a very old version, maybe they're a year out of date and then some customers that just took the newest one. So but the same same code base.

 **Kommuri, Venkata** 52:50  
OK.  
So they follow the blue-green deployment or or any other deployment process.

 **Lynn Crumbling** 53:11  
No, we don't. We don't support blue-green.

 **Marc Kaplan** 53:15  
Everything here is roll forward and we might get lucky to be able to roll back.

 **Kommuri, Venkata** 53:24  
OK.  
And how do you make sure that you know, suppose if you are deploying A shared component, right? How do you make sure that it won't impact all your customers?  
Are you planning? Do you normally test run all the test cases in in pre prod environment, deploy the code in pre prod and test everything? Make sure it's no impact.

 **Marc Kaplan** 53:48  
In.  
Releases always go up through the the um.  
Yes, releases always go from lower to uer.

 **Kommuri, Venkata** 54:00  
OK.

 **Marc Kaplan** 54:01  
The only shared, the only place where we don't have a component like that would be the BI platform. As far as I'm aware, it's only the BI platform.

 **Kommuri, Venkata** 54:12  
OK.  
So do you have a a proper defined process for Dr. scenarios?

 **Marc Kaplan** 54:26  
Not really.

 **Kommuri, Venkata** 54:26  
OK, like a process, right? You know you have, do you have a runbooks, you know, and suppose if the one component is down in one region, how do you, you know, switch to the second region? Do you have that?

 **Marc Kaplan** 54:37  
Well, we don't have, we don't have the ability to be able to do that by component. That's the problem. It's all or nothing.

 **Kommuri, Venkata** 54:44  
Oh, OK.

 **Marc Kaplan** 54:45  
And that's that's kind of the the the problem that we're in right now is, is that we again we don't have the technology to be able to do that where we used to do block level replication with our V blocks. Now we only have Commvault as our solution.

 **Kommuri, Venkata** 54:57  
Mhm.

 **Marc Kaplan** 55:00  
And we've grown so rapidly that both data centers don't have enough space to accommodate the opposing region. So we're tied on resources and that's again why we're asking the team to help us solve for Dr.  
Uh, via AWS because we can't do it on Prem.

 **Kommuri, Venkata** 55:20  
OK.

 **Lynn Crumbling** 55:24  
OK.

 **Marc Kaplan** 55:26  
Or at least I should say we cannot do it at scale on Prem.

 **Kommuri, Venkata** 55:33  
Got it.  
So do you normally set up all the monitoring alerts or alarms on these application components?

 **Marc Kaplan** 55:53  
I think most of the teams contribute to the monitoring and the alerting.  
There's no centralized group that's doing any of that from a visibility and observability perspective.

 **Kommuri, Venkata** 56:05  
OK. Is there any central logging system or a central monitoring system like, oh, you already have a data dog right here?

 **Marc Kaplan** 56:12  
Yeah, it's it's it's mixed between Datadog and Grafana.

 **Kommuri, Venkata** 56:16  
OK.  
I see a tag.

 **Marc Kaplan** 56:19  
The the ambition is Grafana would probably be the more preferred solution. We have a new hire. We have a new person that joined the organization that is gonna be making that determination. There is no determination as of today though.

 **Lynn Crumbling** 56:29  
Yes.

 **Lei Shi** 56:40  
Hi Mark I I post a link in the chat there. So these days I've been reading and learning from the Confluent page. I came across see a page talk about the disaster recovery Dr. test where has a link I don't have access. So is that just a?  
Outdated document that we can ignore or there's really something in place that we can learn from how you do the Dr. test today.

 **Marc Kaplan** 57:06  
I'm not. I'm not even sure which line of business this is from. I have to look.

 **Lei Shi** 57:12  
Gotcha.

 **Marc Kaplan** 57:13  
This is definitely not guiding care.

 **Lei Shi** 57:15  
OK.  
Thanks for confirming.

 **Marc Kaplan** 57:19  
Yep.

 **Kommuri, Venkata** 57:33  
AWS team, any any more questions?

 **Lynn Crumbling** 57:38  
I can cover some more things yet if you guys want. So we're done talking about inbound. There's a number of third party software integrations that we support. Just run down through those real quick so you're familiar with them. On the right hand side there on the top you'll see them at least we integrate with Okta.

 **Kommuri, Venkata** 57:52  
Yeah.

 **Lynn Crumbling** 57:58  
All of our customer facing environments I believe are now SSL. Is there still one left mark or is it completely SSL at this point?

 **Kommuri, Venkata** 58:03  
Oh, OK.

 **Marc Kaplan** 58:09  
Sorry, which component I was looking in confluence.

 **Lynn Crumbling** 58:11  
Okta, are we completely SSO at this point?

 **Marc Kaplan** 58:15  
Customer facing yes.

 **Lynn Crumbling** 58:16  
Yeah, OK, so we we do have the ability to log into our application using our own local username password store, but customer facing everybody goes through Okta there's.  
A piece of software that we use, the third party piece of software that we use for doing letter designing. So you can generate a letter template and then send, you know, publish that template and allow your users to send letters using that letter template. That's called Smartcom.  
There's two different third party services that we use for pulling authorization guidelines and best practices. Those are called MCG and Interqual.  
There's two different social determinant of health providers that we use for retrieving information. That's well, Sky and Findhelp. And then finally there's an article repository. That's a third party piece of software that provides.  
Things like you go to your physical therapy appointment and which exercises should be done. So you you can pull those. That's called Health Wise.  
So lots of integrations that we provide direct access to from our application. We also have two observability tools that we're using, although actually I guess now it's it's changing. Previously we used Datadog.  
And then Foglight is specific to SQL Server. So I I don't know whether we'll continue using Datadog going forward, but certainly Foglight is crucial. Are we still going to keep Datadog Mark?  
Do we know what that's?

 **Marc Kaplan** 1:00:09  
That's not my decision moving forward. That's Troy's.

 **Lynn Crumbling** 1:00:12  
OK.

 **Marc Kaplan** 1:00:13  
Foglight, solar winds. That also is not my decision. We might not retain those.

 **Lynn Crumbling** 1:00:17  
Oh, I hope we. I hope we keep fog late. That's been crucial.

 **Kommuri, Venkata** 1:00:23  
So these are the servers deployed on on Prem or are you using the SAS version?

 **Lynn Crumbling** 1:00:29  
Foglight is deployed on Prem. Datadog is SAS.

 **Kommuri, Venkata** 1:00:42  
And the same same for the all other third party integrations. They are deployed in the third party environment, right? You don't, you don't deploy any of these things in your local data center.

 **Marc Kaplan** 1:00:46  
Mhm.

 **Lynn Crumbling** 1:00:56  
Correct. We're we're talking APIs.

 **Kommuri, Venkata** 1:00:59  
OK, there's only good.  
So what is this? You said API gateway, right? What kind of a gateway is this? Can you explain that API gateway?  
WSO 2 is there, right? Or what kind of is that?

 **Lynn Crumbling** 1:01:25  
Yeah, it's it's the customer's interface to be able to connect our APIs. Essentially, it's us. It's providing a way for us to publish specific API routes from within our enterprise to customers and create credentials so that those customers have to authenticate.  
WSA 2 does a lot of things. We're probably using only 20% of its functionality, but the basic premise is we're giving the customers a route to access one of our back end APIs.

 **Kommuri, Venkata** 1:02:01  
OK, Rafael, are we are we planning to move from here to the AWS API gateway and you might do it.

 **Raphael Titus** 1:02:08  
Oh, that's a that's a conversation that we are having. Venkata. We still don't have a decision yet. Probably we'll know in coming like 2 weeks or so.

 **Kommuri, Venkata** 1:02:19  
OK.

 **Raphael Titus** 1:02:20  
Yeah, it can go either way, so.

 **Kommuri, Venkata** 1:02:25  
Yeah, because yeah, if you're not moving to AWS API gateway, then we had to, you know, plan for VR of this, right?

 **Raphael Titus** 1:02:36  
That's right, yeah. But I'll give, we'll get an answer probably in like 2 weeks Max end of next week or early next to next week.

 **Kommuri, Venkata** 1:02:41  
OK.  
K.

 **Lynn Crumbling** 1:02:49  
So that's all that I have. If anybody has any more questions, happy to answer them.

 **Lei Shi** 1:02:56  
Oh, I I have a question about this diagram. So is this like the ultimate components for your largest client instance or there might be some instance has some additional components that we didn't cover today?

 **Lynn Crumbling** 1:03:12  
Um.  
The latter. So actually, no, I'm sorry, the former. So the this pretty much summarizes if everybody had, if a customer has everything installed, this is what it would look like. So some customers, for example, don't have a member portal, they don't, they don't use the member portal and that's a.  
That's a additional component that they have to purchase, as is the authorization portal. So um.

 **Lei Shi** 1:03:37  
Up.

 **Marc Kaplan** 1:03:38  
I the the only thing I'd stipulate to that though this doesn't have min lock right? This doesn't have connected apps service bus.

 **Lynn Crumbling** 1:03:44  
Good point. Um, so it's it's just.

 **Marc Kaplan** 1:03:47  
So this this would be the universal on Prem stuff the.

 **Lynn Crumbling** 1:03:51  
It has. It has the service bus on the bottom right there. But you're right, it doesn't have. It doesn't have min lock. So min lock is almost a one off. It's it's now being used by two customers, which is why I can't call it a one off.

 **Marc Kaplan** 1:03:54  
OK.

 **Lynn Crumbling** 1:04:06  
So essentially it's this. I'll just go over it real quick to see you guys have an idea. Minlock is a way for us to push data to the state of Texas for things like assessments so that they can be scored when we push the.  
The data down to the to the API that's owned by the state of Texas. They produce a score. We wait until that score is available and then we import that score into our database. That's that's the whole process.  
And it's really only being used by two of our customers, one, one of which is a subsidiary of the other customer, which is why it's used by two instead of one.

 **Lei Shi** 1:04:53  
So it's sort of, um, part of that Alban data process.

 **Lynn Crumbling** 1:05:00  
Yeah, it's it's it's strange. It's. I'm not even sure I called outbound because we're not pushing data for the purposes of that, for the purposes of the data being stored somewhere else. Usually in outbound where we're sending it to a downstream system, but here all that we're doing is submitting something.  
To get a to get a score, to get a sort of a metric. And then once that metric has been produced, we contact the API again to retrieve the metric. So it round trips.

 **Lei Shi** 1:05:34  
Gotcha. But it's it doesn't sound like a dependency to you, right? So it's like whenever you need to send for evaluation to get a score, you just do that on on demand for one time thing or you know, periodically, but not like a.  
Has like a a connection maintained all the time.

 **Lynn Crumbling** 1:05:55  
Correct it it it's it's going on on some sort of batch cycle where it sends it checks to see if there's any new ones every few minutes I believe. But so right now that's hosted that that's hosted in a profile logic application up on. I'm sorry, not profile logic app.

 **Lei Shi** 1:06:02  
Gotcha.

 **Lynn Crumbling** 1:06:13  
A logic app up on Azure and it's being rewritten to just be on a virtual machine, just sitting as a as a process running on a virtual machine.

 **Lei Shi** 1:06:23  
Is that over Internet or you have like a private connection to that Texas entity there?

 **Lynn Crumbling** 1:06:31  
I'm not familiar with whether we have a.  
Do we have a special anything special linking us to the state of Texas now? OK.

 **Marc Kaplan** 1:06:40  
No.

 **Lynn Crumbling** 1:06:43  
So since that Logic App lives up on Azure, when we send data up to the Logic App, it contacts the State of Texas directly from Azure and then pushes the data back into the Logic App for us to retrieve it from Guiding Care.  
So it actually goes up to Azure, out to the state of Texas, back to Azure, and then back down the guiding care on Prem.

 **Lei Shi** 1:07:09  
Gotcha. So the endpoint from Azure is your entry order to fulfill this process.

 **Lynn Crumbling** 1:07:17  
Yep, Yep, that's what. That's what connects to the state of Texas.  
And that is all subject to regulatory requirements as well.  
For the customer.

 **Lei Shi** 1:07:31  
Watch it.

 **Lynn Crumbling** 1:07:36  
It's like Raja brought up the doc IO hosting architecture. We can talk about that very briefly. I'm not. I'm mostly familiar with this.  
So.  
The big thing here is that you're like I said, there's really three pieces involved. There's Kubernetes, there's Cosmos DB for the metadata, and then there's S3 for the actual binary data.  
So Guiding Care would contact the Kubernetes service, the API running on the Kubernetes service, and that does the work of talking to BLOB storage as well as Cosmos.  
This is my first.

 **Kommuri, Venkata** 1:08:28  
So this is this is deployed in Azure right in doc IO.

 **Lynn Crumbling** 1:08:32  
Yes.

 **Kommuri, Venkata** 1:08:35  
And you have an integration from your onrem to Azure.

 **Lynn Crumbling** 1:08:42  
We we have a, we have, yeah, we have. I'm not sure if is it a VPN mark or is it just? I guess it is.

 **Kommuri, Venkata** 1:08:43  
All right, the connectivity.

 **Marc Kaplan** 1:08:54  
With connectivity to Azure, it's just VPM.

 **Lynn Crumbling** 1:08:56  
Yeah.

 **Kommuri, Venkata** 1:08:57  
Oh, just a little.

 **Lynn Crumbling** 1:09:00  
And that is that is locked down to only our IP address to be able to contact this.  
Yeah.

 **Raphael Titus** 1:09:09  
Call.

 **Lynn Crumbling** 1:09:09  
Only the internal IP address even.

 **Raphael Titus** 1:09:11  
Yeah, and central there is a Cosmos DB for doc IO which uses some metadata so let me know that as well.

 **Lynn Crumbling** 1:09:19  
Yeah.  
So all of this infrastructure that you're looking at here is multi-tenant. Everything that's up on up, everything that's up on Azure is multi-tenant.

 **Kommuri, Venkata** 1:09:30  
So so is this the Rafael? Is the Azure stuff also in our plan to move from Azure to?

 **Raphael Titus** 1:09:38  
Yes, yes, yes. For GC whatever I understand Venkata from the get go right now is few of the APIs are deployed in Kubernetes like doc IO and three other APIs which is in Kubernetes and there are some storage blobs and some Cosmos DB aspects so far that we found.

 **Kommuri, Venkata** 1:09:49  
Um.

 **Raphael Titus** 1:09:58  
So that we'll have to move to Kubernetes service in AWS and S3 components. So yeah, that's the only Azure scope for guiding care at this point.

 **Kommuri, Venkata** 1:10:05  
From.  
OK, so we'll move to EKS and then S3, right? Right.

 **Raphael Titus** 1:10:14  
We'll have to decide on the Cosmos DB, what would be the equivalent and how? Yeah, because they are just using. We'll have to look into the aspects of what is being used in Cosmos DB at right now because they are just using for the metadata. They are not storing any data for doc I at least.

 **Lynn Crumbling** 1:10:15  
Yeah.

 **Kommuri, Venkata** 1:10:18  
Hey, correct.  
Oh, OK.

 **Jacob Leblanc** 1:10:34  
Yeah, I imagine we could probably do a Dynamo for that.

 **Raphael Titus** 1:10:36  
Yep. Mm-hmm.

 **Senthil Ramasamy** 1:10:39  
And the external data store mentioned here, that's a SQL Server database right there.  
Running in Azure.

 **Lynn Crumbling** 1:10:47  
I'm not sure what that is.  
My to my knowledge, yeah, go ahead.

 **Jacob Leblanc** 1:10:53  
No, this. Yeah, I don't think there's any SQL Server for doc IO.

 **Kommuri, Venkata** 1:11:03  
You're also using elastic search, right? What is that doing?

 **Lynn Crumbling** 1:11:08  
I don't. I don't know about that.

 **Jacob Leblanc** 1:11:14  
Yeah, I don't think there's any elastic search either.

 **Lynn Crumbling** 1:11:19  
This is so this is my first time seeing this diagram. Um.  
And you know.

 **Kommuri, Venkata** 1:11:28  
OK. I mean, I don't think it'll be difficult this one because it's all like same in AWS, we have everything mapped, right? You have EKS, you have API gateway. If we really need elastic stage, we do have elastic stage.

 **Lynn Crumbling** 1:11:32  
1.

 **Kommuri, Venkata** 1:11:46  
Uh, Container registry, ECR, Docker push. Yeah, we have CICD here.

 **Senthil Ramasamy** 1:12:03  
Rafael, we had to find out the the conversation we had yesterday with GC team regarding the other databases in Azure for GC other than the Cosmos. We had like 10 plus SQL Server. We identified whether it is being used or not.

 **Raphael Titus** 1:12:20  
Yeah, the call we had at the Lynn Senthil, no, none of them is aware of. So there is another call that has been scheduled on Monday and Tuesday. So we'll get to know more.

 **Senthil Ramasamy** 1:12:34  
Yeah, uh, because the DB team I spoke to, uh, they're not aware of any SQL Server databases in Azure. Uh, yeah.

 **Raphael Titus** 1:12:40  
OK. Yeah, I think Monday, Tuesday, we'll be able to square that out.

 **Senthil Ramasamy** 1:12:44  
Sure. Thanks.

 **Vidya Sambasivan** 1:12:44  
Can you invite Konda for the call, Rafael?

 **Raphael Titus** 1:12:47  
So yeah, I'll invite to both of them. OK.  
It's happening in the mornings, so I think we should be able to accommodate.

 **Lynn Crumbling** 1:12:58  
So if we're going to retarget this to use different databases and different back end storages, we are going to have to make good modifications to doc IO if it's no longer talking to S3 or if it's talking to S3 instead of.  
Azure BLOB Storage.

 **Vidya Sambasivan** 1:13:18  
I think we should uh.

 **Kommuri, Venkata** 1:13:19  
They finished.  
So yeah, the only thing is you know you unless you you have any customization that you made to doc IO to tightly integrate with you know Azure BLOB storage.

 **Vidya Sambasivan** 1:13:21  
Sorry, go ahead.

 **Lynn Crumbling** 1:13:36  
That's that's.

 **Kommuri, Venkata** 1:13:36  
Otherwise, normally they have, you know, connectors to connect to different block storage, right? Object storage.

 **Lynn Crumbling** 1:13:50  
Yeah.

 **Jacob Leblanc** 1:13:50  
Yeah, no, I think it's relatively straightforward. We're just using like a Mongo client to talk to Cosmos and then we're using, you know, just whatever the Azure.  
Bob client is.  
So yeah, we gotta make code changes for sure. The much bigger concern is the data migration.  
Right, we're gonna need like some utilities to migrate data.

 **Kommuri, Venkata** 1:14:15  
Yeah, and and I also need change the connectors, you know.

 **Jacob Leblanc** 1:14:19  
Yep.

 **Vidya Sambasivan** 1:14:21  
It'll also be good to see if this is the time we can just use S3 sort of doc IO.

 **Lynn Crumbling** 1:14:22  
See.  
Are we entertaining going back to file format by any chance?

 **Jacob Leblanc** 1:14:30  
What?

 **Lynn Crumbling** 1:14:36  
Instead of this the separate binary metadata DBS, it's actually returning it effectively back to a file system.

 **Jacob Leblanc** 1:14:50  
I don't know. We'd have to look at it.

 **Lynn Crumbling** 1:14:50  
Except in.  
So then the reason I'm bringing that up is because David actually David Goldberg wrote a tool to retrieve data from our BLOB storage and retrieve data from Cosmos and marry those back together into a file.  
So we we actually do have a tool to do that operation, just so that you guys are aware of it if we wanted to go down that road.  
Yeah.  
Can you mail?

 **Lei Shi** 1:15:20  
How large is the Bob?

 **Kommuri, Venkata** 1:15:22  
Yeah.

 **Lei Shi** 1:15:25  
Sorry, go ahead.

 **Lynn Crumbling** 1:15:27  
Can you mount S3 as a file system view?

 **Lei Shi** 1:15:33  
Um, from server?

 **Lynn Crumbling** 1:15:36  
Yeah.

 **Raphael Titus** 1:15:37  
Yes.

 **Kommuri, Venkata** 1:15:38  
Yeah.

 **Lynn Crumbling** 1:15:39  
K.

 **Lei Shi** 1:15:41  
I I just post a link how to typically migrate data from Azure BLOB server, sorry the BLOB storage to Amazon S3. So the question is like how large is the data so we can estimate the the time or effort.

 **Lynn Crumbling** 1:16:00  
Good question.

 **Raphael Titus** 1:16:03  
Because this is going to happen for source as well, the same type of migration from storage blobs to S3.

 **Lynn Crumbling** 1:16:06  
Mark.  
Oh, OK.

 **Jacob Leblanc** 1:16:15  
Yeah, but then we also need to like update our metadata and everything, right? So we have pointers to the locations, so we gotta make sure that.  
That all happens as well. That's why I said it's that's gonna be the bigger issue. I think the code changes will probably be, unless we're changing how we're doing things, it'll probably be pretty straightforward to just switch over to like S3 and Dynamo, right? But.

 **Lynn Crumbling** 1:16:33  
The uh.

 **Jacob Leblanc** 1:16:38  
Yeah, we're gonna have to do that migration and update all the metadata and do it in a way that has business continuity is gonna be the challenge.

 **Lynn Crumbling** 1:16:42  
Yes.  
And Jacob, the the data that lives in a in a BLOB storage is encrypted on a per customer basis. It might even be on a per instance basis. So I mean obviously if it's going from one place to the other and staying encrypted, you know byte to byte, it doesn't matter as long as the decryption keys get moved.

 **Jacob Leblanc** 1:17:03  
Yeah.

 **Lynn Crumbling** 1:17:07  
Along with them. So maybe maybe encryption doesn't even become a factor, but I just the more information people have better.

 **Jacob Leblanc** 1:17:14  
Yeah, I mean, I think the keys are stored in Cosmos. I mean the key, the keys themselves are then encrypted also, right? I don't know, just storing the the keys there in plain text, but um.

 **Lynn Crumbling** 1:17:15  
S.  
I believe so, yes.  
I.  
Feel like that's true, but I'm not 100% sure about that.

 **Jacob Leblanc** 1:17:29  
I I think we have at least a master key. I don't know that we actually use key management, which is a whole other problem, but I'll still get it again. But the point is like for the encryption of the actual files, then yeah, as long as we kind of migrate that metadata along with it, we should be able to continue to read them.

 **Lynn Crumbling** 1:17:49  
Yep.

 **Jacob Leblanc** 1:17:53  
It's all gonna be tested, developed and tested. So that's what I mean. This isn't like a this will be a more like involved project to actually do this migration of this data.

 **Lynn Crumbling** 1:18:03  
So.

 **Kommuri, Venkata** 1:18:07  
So do do you have any other documentation other than this this architecture diagram?

 **Jacob Leblanc** 1:18:19  
Or doc IO.

 **Kommuri, Venkata** 1:18:21  
No, no, not Docker for for the guiding care application in general.

 **Jacob Leblanc** 1:18:23  
Just in general.

 **Lynn Crumbling** 1:18:27  
Um, I mean, yeah.

 **Vidya Sambasivan** 1:18:29  
Architecture diagram. What are you specifically looking for?

 **Kommuri, Venkata** 1:18:34  
No, is there any like a compliance page that we can go under for?

 **Lynn Crumbling** 1:18:40  
There there's thousands of confluence pages.

 **Vidya Sambasivan** 1:18:40  
But what? Yeah, what in particular?

 **Kommuri, Venkata** 1:18:44  
Just related to this application right now, is there anything that we?

 **Vidya Sambasivan** 1:18:48  
It's a huge application is the is it a product overview, technical documentation, architecture like not like not?

 **Kommuri, Venkata** 1:18:58  
Architecture and technical documentation.

 **Raphael Titus** 1:18:58  
Architecture. Yeah, I mean, yeah, whatever we discuss right now, if it is in a form of document, it'll be easy for us to digest today after this call.

 **Kommuri, Venkata** 1:19:03  
Ed.

 **Vidya Sambasivan** 1:19:09  
OK, awesome. Yeah, let me get the slides and I'll push it on Confluent and share the link.

 **Raphael Titus** 1:19:17  
OK.

 **Kommuri, Venkata** 1:19:18  
Thank you.

 **Raphael Titus** 1:19:19  
Thank you.

 **Kommuri, Venkata** 1:19:23  
Um, AWS team may say anything else I wanna discuss.

 **Raphael Titus** 1:19:32  
Nothing at this point for me, Venkata.

 **Kommuri, Venkata** 1:19:35  
Yeah, I.

 **Lei Shi** 1:19:36  
Yeah, nothing more from me. So I we we we have like another session this afternoon for guiding care about the networking perspective or learning zone perspective. I forward the call to you Venkata and if you have the time to join.  
You can learn more from networking perspective.

 **Kommuri, Venkata** 1:19:56  
Sure, yeah.

 **Raphael Titus** 1:19:56  
When is it? When is it early?

 **Lei Shi** 1:19:58  
This afternoon. So central time I think is the 3:00 PM, but let me double check. I can forward to you. Yeah, OK.

 **Raphael Titus** 1:20:02  
OK.  
Sure. Thanks.

 **Kommuri, Venkata** 1:20:10  
Oh, there's a one he said. Uh, Michael set up for next week, right? That's for infrastructure.  
Is that?  
Yeah.

 **Lei Shi** 1:20:21  
Next session we have with, yeah.

 **Kommuri, Venkata** 1:20:24  
So this 3:00 PM one is a different one. Is it different?

 **Lei Shi** 1:20:27  
Yeah, that's from Gary. That is from landing zone perspective.

 **Kommuri, Venkata** 1:20:30  
Oh, a landing. OK, cool. Yeah.

 **Lei Shi** 1:20:32  
Yeah.  
Where we will cover the networking piece there and probably some of the inspection flow as well.

 **Kommuri, Venkata** 1:20:37  
Oh, yeah.  
Oh, OK, sure. Yeah, that will be helpful, you know? Yeah, need to understand that.

 **Lei Shi** 1:20:43  
Yeah.

 **Kommuri, Venkata** 1:20:54  
I think we are done. We're done. Thank you everyone. Thanks for your time. It's a great session. We captured a lot of information and understood the architecture of guiding care.  
If we have any questions, we will post it in the Slack charts.  
Thank you everyone.

 **Lei Shi** 1:21:18  
Thank you.

 **Lynn Crumbling** 1:21:18  
Thank you.

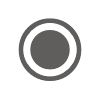
 **Kommuri, Venkata** 1:21:19  
Thank you. Have a nice meeting.

 **Raphael Titus** 1:21:20  
Thanks.  
Thank you. Have a great weekend guys. Thank you.

 **Lei Shi** 1:21:24  
Yeah.

 **Lynn Crumbling** 1:21:24  
Take care.

 **Kommuri, Venkata** 1:21:26  
Thanks.

 **Raja Karumanchi** stopped transcription