Hawn Nguyen-Loughren (00:00):

Hello, everyone, and welcome back to the Official AWS Podcast. We got a special treat for you today, with all the things AWS Well-Architected as a mechanism. I'm Hawn Nguyen-Loughren, also known as Hawn Solo, your friendly neighborhood co-host of the Official AWS Podcast. I'm joined by Samir Kopal and Alana Morris. Welcome, and thank you for joining us.

Alana Morris (00:00):

Thanks for having us.

Samir Kopal (00:20):

Thanks for having us.

Hawn Nguyen-Loughren (00:23):

Awesome. Tell us a little bit about yourself and what do you do at Amazon Web Services.

Alana Morris (00:28):

Sure. I lead product and marketing initiatives for the Well-Architected tool and I've been on the team for about four years, and really excited to talk about all things Well-Architected today.

Samir Kopal (00:41):

I am Samir. I've been with AWS almost seven years now, and have been working in Well-Architected for all the seven years. I'm excited to help educate people in Well-Architected, to use that as a mechanism. It's a very, very powerful tool.

Hawn Nguyen-Loughren (00:54):

Awesome. We're here to discuss how to use Well-Architected as a mechanism in your organization. I have done over a dozen Well-Architected reviews myself with my customers, and it's been very insightful and invaluable for my customers to help them with their security posture, reliability, operational excellence, performance efficiency, cost optimization, and sustainability for their workloads or applications. I cannot emphasize enough the importance of this from the architecture perspective. Just going back to the basics, right, for the audience, can you give us a brief history or overview of the AWS Well-Architected?

Samir Kopal (01:30):

Absolutely, yeah. It's important to know where Well-Architected comes from. It's a combination of best practices that we've learned over a period of time and best practices that we have implemented as well, so it is tried and tested. Well-Architected was born from basically an outage that we had back in 2012, where we recognized that there were some customers who actually were not impacted by the outage, and in true Amazonian style, as we started looking at what were the best practices they followed, we decided how do we collect this and share this with the community, and there was the Well-Architected framework with four pillars.

(02:07):

Over a period of time, we realized that operational excellence is an important part of being Well-Architected. You need people and processes to be involved, as much as you need your code and your

architecture and infrastructure to be involved there. Based on that, we added operational excellence in 2016 to the framework. As we started talking about the framework and sharing that with the broader community of builders, we realized that there was a need for people to track some of the decision-making that they were doing. We then in 2018 launched Well-Architected as a service.

(02:43):

Today in the Management Console, you can see Well-Architected as a service and you can go in and start answering those questions, and it gives you a de facto, a standard way to learn, measure and improve your workload health. You can apply the same best practices across your organization, and drive consistency in the way your builders actually implement architecture.

(03:07):

That is a brief history of Well-Architected. We continue to evolve the framework. We added sustainability recently to the framework as well because that's an important topic, and we want to make sure that as we are building architecture, we are thinking about being sustainable. We continue to evolve it. We continue to look at best practices. We continue to learn and share this from our customers. We learn from mistakes we make in Well-Architected today. We just launched a new version of the framework earlier this year, so go check it out.

Hawn Nguyen-Loughren (03:36):

Awesome. I actually remember doing my first Well-Architected review as a customer many years ago, and it was an Excel spreadsheet, and it is amazing to see the leaps and bounds that it's evolved today. Just give me a little bit more about just overall improvement of your architecture. How does Well-Architected improve your cloud architecture?

Alana Morris (03:57):

As Samir mentioned, we're continuously updating and looking at the best practices to make sure that they're always up to date and industry-leading. We really like to think of Well-Architected as a continuous improvement mechanism. It's not an audit or a checklist. It's really there to help your teams have a conversation about how they're actually architecting their services and applications in the cloud. We really encourage customers to use the tool as a way to check in and go through the various pillars, and understand how their teams can actually implement some of those best practices.

(04:31):

We have a concept of saving a milestone as you do a review, so we encourage customers to think about the cadence that works best for them. Some customers do a review every couple of months or every six months, depending on how teams are structured. With the ability to actually come back and look at the improvement over time by saving milestones, you can actually see how your decisions in your architecture have actually changed and evolved to minimize any risk, based on the six pillars of the Well-Architected framework.

Hawn Nguyen-Loughren (05:02):

Gotcha. I've actually used those milestones with my customers to help them with their planning or sprint reviews, and to ensure that we have it in the right place so that they can remediate or tackle some of those milestones. In terms of improvement of your overall process, how does AWS' Well-Architected tool help improve your process, which allows for better workload health?

Samir Kopal (05:27):

One of the things with the tool is it gives you a way to start actually documenting things, rather than a conversation. Well-Architected is something that is positioned mostly as it's a conversation starter. It's not an audit or a checklist. It's not a one-time, "I've done all of this, I'm Well-Architected from here on." That doesn't exist. It's a point-in-time state of your workload. For example, you could say, "Today we are deploying to multiple AZs," and then make a small change and not deploy to multiple AZs in your next deployment cycle, and you have a risk in your system for reliability.

(06:05):

In terms of improving processes, it's very important to implement Well-Architected as a mechanism. You start with saying you need to educate your teams about the value that it brings. Like we talked about earlier about consistency, a de facto standard, a standard way to measure. Those are things that it's important that your teams understand the value. We definitely talk about to our customers on educating your teams.

(06:31):

Also with education, what happens is you come to a point where you're not making the same mistakes over and over again. If you are doing an audit or a checklist, it's more of like, "Have I done this," versus Well-Architected is best practices about what should I be doing, why I should be doing it and how I should be doing it. That's the education aspect, so start with that, and then move on to applying the Well-Architected review, using the Well-Architected tool, to some strategic workloads.

(07:00):

We've seen that it works better when it is top-down, so when you have the leadership driving the standard mechanism, saying, "I need to understand what are some of the risks across a portfolio," and picking strategic workloads to start with is an easy way to identify the value it brings. The moment you identify risks ... for example, if you recognize that there is an authorization and authentication service that you're using across all your applications and that has a risk ... fixing that one risk is going to mean that you address a lot more issues, and you make a lot more workloads more healthy and avoid those risks overall. That's typically what we try to tell people, is start with a top-down approach.

(07:42):

Pick strategic workloads that you want to go ahead and implement this with, and then as you do that, start scaling it out. We can talk about some of the features that we have in terms of scaling it out. We have the ability for you to share workloads, and there are more things that we've recently added as well that will help scale those things. Scaling it out is the next step, and once you scale it out, that's half the battle. The bigger one from there is actually having people address those risks. Looking at those portfolio views will help you realize where those risks are, what kind of risks you have, and what resources do you want to allocate towards those risks.

(08:19):

In terms of one of the best practices that I like to share is where we tell people to run game days. That helps you be better prepared. That's an improvement to your process, not just to your infrastructure or code, but it is an improvement to the process of making sure that when an incident does happen, then you have the right logging in place, you have the right people in place, you have the right communication channels established. Because when chaos sets in, that's when you really want to be well prepared for these things. Well-Architected does help you recommend running those game days and improving your processes. That's how I would recommend implementing Well-Architected, more as a process across your organization and not just a one-time review, that you're done and you generate a PDF and claim victory.

Hawn Nguyen-Loughren (09:03):

Absolutely, and I'm actually seeing customers take some of those milestones and weave it into their CIC pipeline or their DevSecOps practices, where they would make sure that the security vulnerability scans that are happening and we have the eyes on glass on monitoring, and so they actually weaved it in on their build pipeline, which is pretty cool to just watch, and it's kind of magical if you ask me. How can customers benefit from using the AWS Well-Architected framework and tool?

Alana Morris (09:29):

We've talked a lot about staying up to date on the latest architectural best practices across the Well-Architected pillars. As customers are expanding out how they build their applications, there are many other best practices that they're also tracking, outside of the Well-Architected framework and the foundational AWS best practices. The tool gives you a single place to actually review those architectural best practices and track progress over time, as we've been talking about.

(09:58):

Recently we launched custom lenses, which allows customers to actually bring in their own set of architectural best practices that they may be using within their organization. That can be best practices around compliance, or certain security best practices that are unique to their organization. It gives them a way to actually review all of these architectural best practices in one place.

(10:22):

The benefit is that they don't have to be cross-checking different spreadsheets like we were talking about earlier, and it gives that one place to actually review and see progress over time. When building custom lenses, customers can actually add in their own questions, best practices and improvement plans, depending on what they're trying to review within their workload. It's not meant to replace the Well-Architected framework. It's meant to actually be used as an overlay, so that you can get that broader understanding of all architectural best practices within a workload.

(10:55):

As Samir was mentioning, this also is a way to scale some of those best practices across the organization. By sharing your custom lenses to other accounts or within your organization, it actually makes sure that everyone is on the same page and following the same set of standards when doing the review.

Hawn Nguyen-Loughren (11:12):

I actually used one of those custom lenses for my FinTech customer to apply a little bit more around PCI compliance like we were talking about, so super cool that we would do that.

Alana Morris (11:12):

Absolutely.

Hawn Nguyen-Loughren (11:23):

How do customers decide what type of workloads they review in the Well-Architected tool?

Samir Kopal (11:28):

Yeah. I mean, ideally the right thing to do is you eventually want to review all types of workload, but we've kept the workload definition itself fluid for now. We let customers decide what they define as a

workload, to be honest. If you go into the tool and try to define a workload, what we are essentially looking for is metadata. We are looking at what's the name of the workload, who is the point of contact, what accounts does it span, what regions does it span.

(11:54):

One of the things that we have recently launched is an integration with application registry, and that allows you to actually group your resources as well. It's no longer just a fluid definition of what you think, but you can go ahead and use application registry to say what resources, what accounts, what tags, resource groups, et cetera, it actually has within an application. Then you can tie that application back to the workload review.

(12:19):

You could go into the AppRegistry console and look at whether you have a review, what are some of the risks that you have there, or you can come to the Well-Architected tool and look at what application does it actually link to, and we use some of the data from that application to filter out the noise. For example, when we do trusted advisor checks, we filter out the resources that don't belong to that application but are within that account.

(12:43):

Those are some of the things that we do. As I said, we would definitely want customers to apply this to a broad set of workloads. We understand some of those workloads are relatively small and not as mission-critical, but it's still important to drive that consistency we were talking about.

(12:59):

The other thing that this does is, as you go ahead and define your workload, it allows you to document some of the things. For example, one of the things we found extremely useful is our notes field, which is surprising, but that was a byproduct of the launch, where people started documenting these architectural decisions and trade-offs that they were making into the notes field. Historically what would happen is somebody would make a decision, leave, and then there was a whole bunch of email trail or conversations that people had to follow to figure out why that decision was made. Now there is a way to actually document and track that over time, to say, "This is the reason we made this decision."

(13:40):

We also launched a couple features where we recognize that with some of the non-mission-critical workloads, some of the best practices don't apply, right? It's an internal-only workload. You don't really have a clearly-defined process for gathering requirements. It's seasonal. Those things, you can go in and mark either a best practice or the question itself as not applicable, and that won't be considered in your review. Those are things that you can use to have a clear idea of what workloads you want to review, how do you want to define them, and then within that definition, how do you want to evaluate some of the questions.

Hawn Nguyen-Loughren (14:17):

Absolutely. I'd actually use those notes very heavily with my customers who say like, "Contact this person, or this is what we did," and et cetera. It was a really great frame of reference, for sure. We did talk about milestones and et cetera. In terms of tracking, so how do customers keep track and manage their improvement needed?

Alana Morris (14:36):

Milestones is a great way currently to see that progress over time, but that's at an individual workload level. We recently launched a consolidated report which enables you to actually see an overview of all risks across all workloads. This helps you more easily identify those risk trends. This gives that macro-level view that helps executive stakeholders, team members, understand where those common issues actually lie across all workloads, and then prioritize the resources available to drive that improvement across.

(15:11):

I can look across my five workloads and see that most of my risk is within security, and then within that consolidated report, I can actually go in and see which improvements are actually applicable to multiple workloads, so that it helps me actually scale that improvement across multiple workloads, which eventually speeds up that process of actually driving that improvement. The consolidated report has been well adopted, a report that customers are using to actually take that macro-level view to see their risk across all workloads, which helps them track those improvements.

Hawn Nguyen-Loughren (15:44):

In terms of priorities, every customer's workloads and needs are different, based on the business priorities. How does Well-Architected support this?

Alana Morris (15:53):

We recently launched profiles, which allows customers to actually tell us a little bit more about what their goals are, a little bit more about their workload, what they're trying to accomplish, and we actually take that profile and then give them a prioritized list of Well-Architected questions that we think align to those goals at that particular point in time. It's giving them a list of the Well-Architected questions to focus on first.

(16:22):

Customers tell us a little bit more about what they're looking to accomplish, what's important to them at that moment, and we then give them a way to actually say, "Okay, take these number of Well-Architected questions, answer them, review them, and then come back to the tool and look at the other ones." This really helps us gather that business context. We don't necessarily know what's important to you when you're reviewing your workload within the Well-Architected tool, so profiles actually gives us a way to learn a little bit more about what you're trying to accomplish and customize the review to meet your needs.

Hawn Nguyen-Loughren (16:54):

Gotcha. What happens if a customer doesn't have in-house expertise to do these reviews?

Samir Kopal (17:01):

Yeah, that's a great question. Yeah, I mean, we do have customers relatively new to the cloud or just starting off, and they may not have the expertise or haven't really built out a cloud center of excellence team. Some of these customers are migrating as well. We have a whole bunch of solution architects and technical account managers who are trained to come in and do these reviews for you, and they will help set this up as a mechanism. These are people that are allocated to your accounts.

(17:26):

If you're working with a solution architect or a TAM, then you should definitely reach out to them and talk to them about how you can conduct a Well-Architected review. One of the key things that they'll do

is ask a whole bunch of questions before in terms of why you want to do the review, what's the outcome, so that they can get the right people in.

(17:44):

The other avenue is we have a really well-defined Well-Architected partner program, and we have a lot of AWS partners who are keen to come in and not just do the review but also help with some of the remediation. That's another thing. We have resources on our website where you could go ahead and look at what partners do the Well-Architected review, and it also helps you build that relationship with these AWS partners who are trained and have competencies and expertise in other areas, and it just helps you go and use their services for a lot more than just Well-Architected reviews.

Hawn Nguyen-Loughren (18:19):

Gotcha. In terms of adoption, how do customers successfully integrate Well-Architected into their organization?

Samir Kopal (18:27):

Integrating Well-Architected is about thinking of Well-Architected as a continuous improvement mechanism. It's important that you don't think of it as an audit, a checklist, you've done it once and you're going to remain in good architectural health for the rest of the life cycle of the application. It's important to start thinking of it as, "How do we make this a standard measurement?"

(18:48):

One of the things I'd like to tell all your listeners is when you are doing a Well-Architected review, set cadence on when do you want to revisit it, because when you do the review, there is going to be a lot of questions that will remain unanswered. There'll be questions that you will want to go do a deep dive on, so keep those open. There are questions that you may think you want to come back to later.

(19:09):

For example, you want to reduce the cost, but at this very moment, the importance is on security. You may want to go think of it later and come back. Go ahead and set that timeline, saying, "In the next six months, I'm going to come back, do this review, or I'm going to do this on a more quarterly basis." That cadence comes from how frequently are you changing your application, your workload. Based on those things, you've got to go ahead and start thinking of it as this is a continuous improvement process.

(19:36):

The other thing that I talked about earlier is where you want this to be more driven from the leadership standpoint, because from an engineering standpoint, it's about actually addressing the issue. From a leadership standpoint, you get to see a portfolio view, and Alana talked about the consolidated report that gives you that view. You can start looking at where in the organization do you have these issues.

(20:01):

For example, a financial customer may want to focus on security risks first, and you can run a campaign and say, "I want to go ahead and have a campaign where we address all security risks that are related to programmatic access," for example. You are making sure that there is a standard way that people are building, following these things.

(20:20):

Custom lenses is a great way to bring in some of the organizational best practices. We've seen customers use it for regulatory needs. If you have a HIPAA workload or a PCI, DSS or FedRAMP, for example, you can go ahead and start putting those into custom lenses as best practices that you share

with their team. They do these reviews frequently, so they are looking at making these changes as they bear, and it's not an expensive change for you to make later.

(20:50):

Those are some of the things that I would say is a great way to integrate Well-Architected into your day-to-day process. I know you talked about people having it in their code deployment pipelines, and I think that's great because we do run unit tests and integration tests. How many times do people run an architecture test? Did I go from being multi-AZ to single-AZ? Has my cost gone up by X percentage? Those are things that become extremely important as you're deploying in the cloud these days.

(21:20):

You're not pre-provisioning capacity. Auto-scaling's there, so you could go ahead and a small mistake could cost you a lot in terms of your AWS bill. These things become important. Putting those checks and balances in early on is something that's great, and Well-Architected helps you do that by integrating it into your day-to-day software development life cycles.

Hawn Nguyen-Loughren (21:40):

Absolutely. I'm a big fan of automate all the things, especially Well-Architected if we can. The cadence is definitely important because it's usually the first one that's the hurdle, and once you get into the rhythm, it becomes more of a second nature type of muscle memory you do. It's something so important, that I believe that everyone should do. Last question I have for you is how do customers get started?

Samir Kopal (22:02):

Yeah. I mean, there is a whole bunch of resources. First of all, the Well-Architected tool is available in the Management Console. That's the first place to start. That will link you out to a whole bunch of documentation that we have, the white papers, the blog posts that are available on the AWS documentation sites. You could go ahead and start reading the white papers. The white papers contain a lot more details in terms of the why this best practice is important or critical.

(22:27):

The tool is a great mechanism for you to start tracking, as Alana talked about, measuring it across the organization or standard format and then reporting back on it, and looking at progress, right? Are you going from having 50 risks today to having 25 risks tomorrow? Are you introducing more risks as you launch these things? I would start with the Management Console. I would read the white papers and the blog posts that we have.

(22:51):

We have another great resource called the Well-Architected Labs, and those are sandboxes that you could go play and figure out, before you actually implement it, what does it look like. Is this actually going to help increase performance for my specific workload, or is this going to help reduce cost for my specific workload? There are those resources there that I would definitely rely on to get started.

Hawn Nguyen-Loughren (23:13):

Absolutely. I've actually tried out the Well-Architected Labs, and I'm a big fan of that. That's super cool. Alana and Samir, thank you for coming to the podcast today.

Alana Morris (23:22):

Thank you so much for having us.

Samir Kopal (23:23):

Thank you. The only thing that I'll say, Well-Architected, this is the way.

Hawn Nguyen-Loughren (23:28):

It is indeed the way. Samir has spoken. As always, we'd love to get your feedback. There's a link in the show notes to submit feedback, as well as the additional links that were discussed today. Until next time, keep on building.