

**In the Matter of:**

Information Security and Financial Institutions Workshop

*July 13, 2020*  
*First Version*

**Condensed Transcript with Word Index**



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1	<p>FEDERAL TRADE COMMISSION</p> <p>INFORMATION SECURITY AND FINANCIAL INSTITUTIONS: FTC WORKSHOP TO EXAMINE SAFEGUARDS RULE</p> <p>MONDAY, JULY 13, 2020 9:00 A.M.</p> <p>VIRTUAL EVENT</p>	3
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1 WELCOME AND OPENING REMARKS

2 MR. LINCICUM: Good morning. I want to

3 welcome everyone to the Information Security and

4 Financial Institutions Workshop by the FTC. My name

5 is David Lincicum. I am an attorney here at the

6 Division of Privacy and Identity Protection at the

7 FTC. Today's workshop is going to be looking at the

8 Safeguards Rule, which is a rule that requires

9 financial institutions to enact safeguards to protect

10 customer information.

11 We're going to start by looking at our

12 current rule and what it requires of financial

13 institutions and then move on to some of the proposed

14 amendments that we issued. If -- and so, let's go

15 ahead and start the slides. Next slide, please.

16 Thank you. The Gramm-Leach-Bliley Act was

17 enacted in 1999, and, among other things, it required

18 several agencies to issue rules for financial

19 institutions in order to have them safeguard their

20 customer information.

21 In response to that, the Federal Trade

22 Commission enacted its safeguard in 2002 and it became

23 effective back in May of 2003. So over the next 17

24 years, no real changes -- well, no changes at all have

25 been made to the rule. We think that shows how

1 flexible that rule has proven, and how robust. But we

2 do periodically review our rules to see if there needs

3 to be updates and we did so recently with the

4 Safeguards Rule.

5 After that review, and seeking some comments

6 from the public, we issued a notice of proposed

7 rulemaking in March of 2019. We got quite a few

8 comments back from proposed rulemaking, and this

9 workshop is going to be looking at some of the issues

10 raised both by the proposed amendments and by some of

11 those comments. Next slide.

12 So let's start with the current rule so we

13 know where we're starting from, what the amendments

14 are -- would change and where they might expand upon

15 the current rule. So the current rule applies to

16 customer information held by financial institutions.

17 Customer information is fairly self-explanatory.

18 That's information that a financial institution may

19 hold that they received from a customer as part of

20 providing a financial service or product.

21 "Financial institution" needs a little more

22 explanation if you're not familiar with it. I think

23 most people when they hear "financial institution"

24 think banks, and while banks are certainly financial

25 institutions, they're not covered by our rule. Our

5	<p>1 rule -- those are handled by other agencies rules.</p> <p>2 Our rule covers nonbank financial institutions and any</p> <p>3 basically financial institutions that don't have</p> <p>4 deposits. And there are a few others that are</p> <p>5 excluded.</p> <p>6 But generally speaking they're the other</p> <p>7 kinds of financial institutions. And that's a fairly</p> <p>8 broad definition compared to what many people have in</p> <p>9 their mind. It goes anywhere from, say, payday</p> <p>10 lenders, other online lenders, debt collectors. It</p> <p>11 can -- it also applies to car dealerships, if they're</p> <p>12 involved in helping customers obtain loans for their</p> <p>13 -- or helping their customers obtain loans. It can</p> <p>14 also apply to universities, if they are involved in</p> <p>15 the financial aid process.</p> <p>16 So the rule would apply to all -- it does</p> <p>17 apply to all customer information that a financial</p> <p>18 institution has, either their own customers or the</p> <p>19 information of customers of other financial</p> <p>20 institutions that give them that information. So it's</p> <p>21 not just the information of that financial institution</p> <p>22 or that that financial institution receives from its</p> <p>23 own customers.</p> <p>24 The rule is based on a requirement that the</p> <p>25 financial institution have a comprehensive information</p>	7
6	<p>1 security; so a plan that lays out all aspects of</p> <p>2 security -- physical, electronic -- and is meant to</p> <p>3 protect the integrity and security of the information</p> <p>4 that they hold. Next slide, please.</p> <p>5 So let's go over what the comprehensive</p> <p>6 information security program needs to have under the</p> <p>7 current rule. First, it has to be appropriate to the</p> <p>8 financial institution size and complexity. So a</p> <p>9 smaller financial institution, a simpler one, will</p> <p>10 have different needs than a financial institution</p> <p>11 that is very large with a complex network.</p> <p>12 The nature and scope of activities. So that</p> <p>13 -- you know, how the information is used, how it's</p> <p>14 stored, that sort of thing. And finally the</p> <p>15 sensitivity of the customer information at issue. So</p> <p>16 a collection of emails has to be treated differently</p> <p>17 than information that includes social security</p> <p>18 members, account numbers, very sensitive information</p> <p>19 like that.</p> <p>20 The program has to designate an employee or</p> <p>21 employees to coordinate the program. So there's</p> <p>22 someone or some people in charge and making sure that</p> <p>23 this happens. And the program has to identify the</p> <p>24 reasonably foreseeable risks, both internal and</p> <p>25 external, to the security, confidentiality and</p>	8
5	<p>1 integrity of the customer information.</p> <p>2 So the program needs to have looked at the</p> <p>3 risks to customer information. It has to basically be</p> <p>4 based on a risk assessment and it has to then assess</p> <p>5 the security of the financial institution and the</p> <p>6 safeguards it has in place to control those risks that</p> <p>7 it's identified.</p> <p>8 Also, the program must address employee</p> <p>9 training, information systems, and detecting,</p> <p>10 preventing and responding to attacks. So kind of a</p> <p>11 full spectrum of information security issues. Next</p> <p>12 slide, please.</p> <p>13 The rule also requires financial</p> <p>14 institutions to -- well, design those safeguards we</p> <p>15 discussed, to control those risks, and to regularly</p> <p>16 test those safeguards to make sure they are actually</p> <p>17 working.</p> <p>18 Also, it addresses service providers as many</p> <p>19 financial institutions use service providers to handle</p> <p>20 or process or store customer information they have.</p> <p>21 And the rule requires a financial institution to</p> <p>22 oversee those service providers by first selecting</p> <p>23 ones that are actually capable of maintaining</p> <p>24 appropriate safeguards and then requiring the company</p> <p>25 to actually maintain those safeguards by contract.</p>	7

9

1 that is adapted to the needs of that financial  
 2 institution.  
 3 And I also want to give credit where credit  
 4 is due, that our proposed amendments are based very  
 5 largely on New York’s cyber security regulations,  
 6 which they implemented in early 2017. Next slide,  
 7 please.  
 8 So the proposed rule has the same basic  
 9 structure of the current rule; doesn’t change it  
 10 fundamentally. It’s still based on the creation of a  
 11 comprehensive information security program that is, in  
 12 turn, based on a risk assessment that is suited to the  
 13 size and complexity of that financial institution.  
 14 So, again, it’s going to vary depending on exactly  
 15 what your financial institution looks like, what  
 16 information they maintain and how they use it.  
 17 What the rule does, though, is require --  
 18 put forth more detailed requirements for the plan,  
 19 what it needs to address, the areas it needs to look  
 20 at, without actually telling the financial institution  
 21 what they need to about those areas. It just says  
 22 this is the area you need to look at and make a plan  
 23 for, such as access control. Who can -- how do you  
 24 control information and make sure that only those who  
 25 are authorized to use it can actually use it.

10

1 Almost all the requirements are process-  
 2 based and adaptable. And so, again, it doesn’t say  
 3 what you need to do exactly. It just gives you a  
 4 process that you need to go through to make sure that  
 5 all bases are covered.  
 6 And, finally, it has an exception for  
 7 companies that have less -- that maintain very little  
 8 customer information and exempts them from some of the  
 9 requirements, primarily the written -- some of the  
 10 written reporting requirements. Next, please.  
 11 All right. The proposed rule, let’s go into  
 12 a little more detail here. Under the proposed rule,  
 13 the financial institutions have to first designate one  
 14 qualified individual to be responsible for overseeing  
 15 the program.  
 16 So the only change we made here  
 17 substantively from the current rule is that we made it  
 18 so rather than it being person or persons, it has to  
 19 be one person. And that’s designed to increase  
 20 accountability so that, you know, someone is in charge  
 21 of the program but also in case of emergency or  
 22 generally process, that it’s always clear who the  
 23 person in charge is, where the directions are coming  
 24 from and, you know, basically give direction to the  
 25 program.

11

1 We also added the word “qualified” to it so  
 2 that the person needs to be qualified. I think we  
 3 would argue that the current rule presumes that, but  
 4 we’re making it explicit here.  
 5 We did use as a term of shorthand, the term  
 6 CISO, or chief information security officer. We  
 7 didn’t intend that to imply that a specific set of  
 8 qualifications was required, but I think that was the  
 9 effect it had. But that was not the intention. We  
 10 think “qualified,” what that means will vary based on  
 11 the size and complexity of the network. A very large,  
 12 complex network may need something -- someone who is,  
 13 you know, what is commonly known as a CISO, or as a  
 14 simpler one maybe it will have someone with more  
 15 modest qualifications and experience.  
 16 So the program has to be based on a written  
 17 risk assessment that lays out -- that includes certain  
 18 criteria for determining risks and then address how  
 19 the program is going to address those risks. So,  
 20 again, the main change here is we give a little more  
 21 flesh on the bones to what the risk assessment has to  
 22 look at and also requires that it be in writing.  
 23 Then you have to periodically perform  
 24 additional risk assessments. And it’s just not  
 25 something that you -- you can’t just do a risk

12

1 assessment in the beginning and never think about it  
 2 again because, as discussed earlier, things change.  
 3 Certainly everyone knows in the information security  
 4 field that it’s constantly a moving target as new  
 5 threats arise, as new vulnerabilities are discovered.  
 6 And like the current rule, there -- it needs  
 7 to be tested and monitored, but a little more  
 8 specificity here in that you can either monitor it  
 9 through continuous monitoring or instead by at least  
 10 doing annual penetration testing and biannual  
 11 vulnerability assessments. Certainly people may  
 12 choose to do it more often than that, but that would  
 13 be the minimum requirement under the rule. Next  
 14 slide, please.  
 15 So the proposed rule also addresses  
 16 training. Under the proposed rule, financial  
 17 institutions must provide security awareness training  
 18 to personnel. So this is to all employees. I think  
 19 most people who work in a company have had similar  
 20 training that lays out the basics of security  
 21 awareness, how to avoid phishing. You know, again, we  
 22 don’t go into that in detail, but, you know, it does  
 23 require that there be at least basic security  
 24 awareness training for everyone.  
 25 And then it says if you have information

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1 security personnel, they need to be qualified. And  
 2 you can do that either through your own employees or  
 3 through a service provider, which I think is  
 4 increasingly common. And then those security  
 5 personnel have to be trained. And the financial  
 6 institution has to verify they're taking steps to  
 7 maintain current knowledge because, as I said, new  
 8 threats arise all the time and security personnel  
 9 really need to be up to speed on what they need to be  
 10 doing to keep their program secure. Next slide,  
 11 please.

12 The proposed rule, in addition to those plan  
 13 requirements, would still require financial  
 14 institutions to oversee service providers. This is  
 15 pretty much the exact same requirement under the  
 16 current rule. And just -- and also they need to  
 17 periodically assess those providers. So that would  
 18 require you to, again, occasionally check and make  
 19 sure that things are actually being maintained  
 20 properly and that they're still capable of providing  
 21 the safeguards that are necessary.

22 Again, you have to evaluate and adjust your  
 23 program just as under the current rule. One addition  
 24 is the requirement for a written incident response  
 25 plan. So this plan lays out what needs to be done,

14

1 who needs to be reported to in the event of a cyber  
 2 security incident. So if there's a breach or  
 3 something like that, they have a -- a plan is in place  
 4 to begin with and how to respond to that and how to  
 5 mitigate the harm; lessen the harm to consumers and  
 6 customers and to your business.

7 And then it would also require that the  
 8 person in charge of the program provide annual written  
 9 reports to the board of directors, or if you don't  
 10 have a board of directors or some equivalent governing  
 11 body or management regarding the status of the  
 12 information security program to basically lay out what  
 13 the needs are, how things have been going, that sort  
 14 of thing. Next slide, please.

15 All right. So the information security  
 16 program, we need to address certain elements. As I  
 17 said, we do lay out some areas it needs to address  
 18 without saying how it needs to be addressed. I'm  
 19 going to go through those quickly.

20 One is access controls. So these are  
 21 controls that limit who can access the information to  
 22 make sure only people who are supposed to give  
 23 information are the ones who are able to access it.  
 24 Another is information inventory. It's basically in  
 25 order to program you really need to know what data you

15

1 have, who's going to be -- who has access to it; what  
 2 devices there are, and where they're all located. You  
 3 need to be able to do that to measure your risk and  
 4 then protect it. If you don't know what you have,  
 5 you're not able to protect it.

6 The secure development practices. So this  
 7 is if your company develops its own applications, they  
 8 need to do it -- the program needs to require that  
 9 they do it in a secure fashion with security in mind  
 10 so that they're not creating applications that are  
 11 vulnerable to attack. And if you're using third party  
 12 applications, you have to do some sort of evaluation  
 13 to make sure they're secure. What that would mean  
 14 would probably vary depending on exactly what software  
 15 you're using and how widely accepted and widely known  
 16 its security is. Next slide, please.

17 Your plan would also need to address audit  
 18 trails and what information you need to record about  
 19 transactions to allow you to detect security events.  
 20 So you can see something strange is going on here, we  
 21 have some record of this; we need to investigate it to  
 22 see if it's a breach or something like that.

23 It also has to address disposal. And this  
 24 is for information you have that you no longer need  
 25 for a legitimate business purpose. There needs to be

16

1 a program in place to dispose of it in a secure  
 2 fashion.

3 Change management. This is basically a plan  
 4 in place for how you will handle changes to your  
 5 system, including connecting up new servers, new  
 6 computers, changing the structure of the network,  
 7 adding databases and that sort of thing. That's often  
 8 a place where vulnerabilities are introduced into a  
 9 system, is during change. And so your plan needs to  
 10 address how you're going to handle that when you do  
 11 this sort of thing; how are you going to make sure  
 12 that your security is maintained.

13 And you have to -- it has to look at how  
 14 authorized users are using their information. Do you  
 15 have employees who are misusing information? And this  
 16 needs to track that so that you can detect problems  
 17 early and deal with them. Next slide, please.

18 So as I've been saying, most of the elements  
 19 of the information security plan are very process-  
 20 based and up to the financial institution to determine  
 21 exactly how it's implemented. There's two elements,  
 22 though, that will require a little more specific  
 23 action from the part -- on part of the financial  
 24 institution. That's in encryption and multifactor  
 25 authentication. We felt that both of those are just

17

1 an integral part of security for financial  
 2 institutions handling customer financial information.  
 3 Both of those requirements, though, allow  
 4 alternatives if the person in charge of the program  
 5 approves them. If, for whatever reason it's not the  
 6 best solution for a financial institution or it's just  
 7 not a viable solution. And both of them, while they  
 8 require encryption or multifactor authentication,  
 9 don't go into the details of exactly how that will be  
 10 implemented. That is still up to the financial  
 11 institution to decide what encryption solution or  
 12 multifactor authentication solution is best for them.  
 13 Next one, or next slide.  
 14 All right. So let's look at the encryption  
 15 requirement first. It would require that all customer  
 16 information that is being held by the company or  
 17 transmitted be encrypted while in transit if it's over  
 18 external networks and while it's at rest.  
 19 So points to note about this is it applies  
 20 only to customer information. Other information  
 21 handled by the financial institution would not  
 22 necessarily need to be encrypted and it would be up to  
 23 the financial institution. And for the transmitted  
 24 information, it only applies to external networks. It  
 25 does not apply to transmissions within the financial

18

1 institution's network.  
 2 And as I said before, if encryption is not  
 3 feasible for some way, then you can come up with  
 4 alternative controls that have been reviewed and  
 5 approved of by the person in charge of your  
 6 information security program. Next slide, please.  
 7 All right. The multifactor authentication  
 8 requirement would require multifactor authentication  
 9 for any individual accessing customer information. So  
 10 if anyone is going to look at the customer  
 11 information, they need to go through a multifactor  
 12 authentication process. I think most people are at  
 13 least basically familiar with multifactor  
 14 authentication. Most of us use it in some fashion in  
 15 our online life.  
 16 But just to be clear, what we've defined  
 17 multifactor authentication here is — is that it must  
 18 include two of three possible factors that it's going  
 19 to need. One is a knowledge factor, or things you  
 20 know. So this is our passwords or biographical  
 21 information such as mother's maiden name or older  
 22 addresses, that sort of thing.  
 23 Possession factor, things you have. So this  
 24 might be an actual physical token that you have that  
 25 gives you a code or something like that or it is

19

1 attached to your computer, or it may be a device that  
 2 you have possession of, a particular phone or a  
 3 particular computer that verifies that you have this  
 4 factor. It can be satisfied that way.  
 5 There's also the inherence factor, which is  
 6 things you are. So this would be biometric  
 7 characteristics. I think fingerprints are probably  
 8 the most common still, but it also might include voice  
 9 prints or face recognition, or to get a little less  
 10 common and more sci-fi, retina prints, that sort of  
 11 thing. I mean, it's meant to include anything that  
 12 anyone comes up with that is things you are.  
 13 And, again, if this doesn't work for  
 14 whatever reason, the person in charge of the program  
 15 can come up with a different solution. You just have  
 16 to memorialize that decision in writing. Next,  
 17 please.  
 18 All right. A little more detail on the  
 19 proposed exception to the written requirements. We  
 20 decided that the best way to measure this was the  
 21 amount of information that a financial institution  
 22 maintains about consumers. Because a small company  
 23 that is maybe small in size, so budget or customers,  
 24 may still hold information of tens/hundreds of  
 25 thousands of information of consumers in today's

20

1 environment. It's something that happens. And those  
 2 companies, even if they're small, if they have access  
 3 and responsibility for information of that many  
 4 consumers, we feel they still need to meet these  
 5 requirements.  
 6 But if you're a company that really does not  
 7 maintain much information, this would require --  
 8 exempt you from most of the requirements that things  
 9 be in writing and the written reports and things of  
 10 that nature, just to make it a little easier to comply  
 11 with. Although the basic requirements would still be  
 12 very much in place for anyone handling customer  
 13 information. Next slide, please.  
 14 So that brings us to today's workshop.  
 15 We're going to be speaking with people with direct  
 16 experience providing information security to  
 17 organizations, including financial institutions and  
 18 other experts in the field, who, you know, have direct  
 19 expertise in the information that we're talking about.  
 20 What we're looking to do today is to gather  
 21 some more concrete information on the cost and  
 22 benefits of the practices that we set forth in the  
 23 proposed rule and to address some of the comments,  
 24 just to get more information on those comments.  
 25 We are particularly interested in the costs

21

1 and scalability of these requirements to smaller  
 2 businesses. What will the cost be to a small business  
 3 and are there solutions that are -- that scale down to  
 4 your size? Are there solutions that take into account  
 5 your smaller size that will be cheaper and easier to  
 6 implement. Next slide, please.  
 7 All right. I believe the schedule should be  
 8 on the page that you're all watching this from. But I  
 9 hope you'll join us for the rest of the day. In just  
 10 a few minutes after this, we'll start Panel 1. It's  
 11 going to look at costs and benefits of information  
 12 security programs. Then after a short break, we'll  
 13 have a panel on information security programs and  
 14 smaller businesses particularly.  
 15 Then after lunch, at 1:00, we'll do a panel  
 16 on continuous monitoring and penetration vulnerability  
 17 testing. And after a short break at 2:15, we'll do  
 18 one on accountability, risk management and governance  
 19 of information security programs. And finally we'll  
 20 finish up the day with a panel at 3:30 on encryption  
 21 and multifactor authentication. Next, please.  
 22 Throughout the day, we really hope that if  
 23 you have any questions for our panelists that you'll  
 24 send them to us. This being our first virtual panel,  
 25 we're still -- virtual workshop, we're working out

22

1 details. Hopefully this will work well. If you send  
 2 any questions to [safeguardsworkshop2020@FTC.gov](mailto:safeguardsworkshop2020@FTC.gov) --  
 3 there should be a link on the page you're viewing this  
 4 on -- then we will try to ask as many of those as  
 5 possible of our panelists.  
 6 And then following the workshop, if you have  
 7 any comments on the proposed amendments or anything  
 8 that is said or presented in this workshop, go to  
 9 [regulations.gov](http://regulations.gov) and look at the Safeguards Rule entry  
 10 and you can enter comments there for about a month  
 11 after today.  
 12 So thank you very much and I will see you  
 13 all in a few minutes on the first panel. Have a good  
 14 day.  
 15 (Brief recess.)  
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23

1 THE COSTS AND BENEFITS OF INFORMATION SECURITY  
 2 PROGRAMS  
 3 MR. LINCICUM: Good morning and welcome to  
 4 the first panel of the FTC Safeguards Workshop. I'm  
 5 David Lincicum, an attorney with the Division of  
 6 Privacy and Identity Protection here at the FTC. And  
 7 we have four panelists who were gracious enough to  
 8 join us this morning. I will go through and introduce  
 9 them each, and I think they'll probably raise their  
 10 hand or somehow gesture just so you know who I'm  
 11 talking about.  
 12 First we have Pablo Molina, who is the chief  
 13 information security officer at Drexel University and  
 14 a lecturer at Georgetown.  
 15 Then we have Serge Jorgensen, who is the CTO  
 16 and founding partner of the Syllint group.  
 17 And then Chris Cronin, a partner at HALOCK  
 18 Security Labs. And Sam Rubin, the vice president at  
 19 the cybersecurity consulting firm, the Crypsis Group.  
 20 So this panel is going to address the costs  
 21 and benefits of information security programs of  
 22 financial institutions. You saw in my introductory  
 23 remarks, I mentioned that both the current rule and  
 24 the new rule are really based on risk assessment. And  
 25 in order to have risk assessment, really costs and

24

1 benefits of these programs are key to that.  
 2 So let's start, and I'll ask Chris. What is  
 3 a risk assessment in this context? What are people  
 4 look at as far as costs and benefits and how do they  
 5 start that process?  
 6 MR. CRONIN: Yeah. Well, there's what  
 7 people are doing and there's what they should be  
 8 doing. So I'll just very quickly say that people are  
 9 not generally doing what we would consider risk  
 10 assessments. What they're doing is having an auditor  
 11 come in and run an audit or they'll be engaged in a  
 12 maturity model assessment. Am I a one, two, three,  
 13 four or five? And if they're with a consultant who  
 14 isn't really grappling with real security issues or  
 15 risks, then they might even hear, well, go to a three.  
 16 Everyone -- all of your peers are at a three out of  
 17 five, whatever that means.  
 18 That's actually commonly what's happening.  
 19 What we understand the Federal Trade Commission,  
 20 regulators, even litigators and information security  
 21 people, are really going for is an evaluation of the  
 22 likelihood and the magnitude of harm that can come  
 23 from bad things that happen.  
 24 Now, we all have really good information  
 25 about the bad things that happen. There are some that

25

1 have yet to be invented, we know. But if we're doing  
 2 an actual risk assessment, we're looking at the  
 3 likelihood and impacts of things that could go wrong  
 4 in environments like ours. And what you're also  
 5 suggesting in the proposed updates is that there's a  
 6 -- that you also evaluate the controls, which is super  
 7 important. If we're going to have a good definition  
 8 for reasonableness, we want a cost/benefit evaluation  
 9 to say when you look at the likelihoods of impacts  
 10 without the control I'm considering. Let me evaluate  
 11 it with the controls I'm considering and let me see  
 12 where the balance is. And as long as we've thought  
 13 about the impacts to ourselves that could be harmed  
 14 and the impacts to others who we're protecting, then  
 15 we're actually -- we've got a good basis for  
 16 reasonableness. We're just not hitting that yet.  
 17 When you do look at stuff that comes from  
 18 the federal regulators and three-letter agencies, the  
 19 way you see attorneys talk about things, you know,  
 20 when a breach case is going on, when you're talking to  
 21 information security people, they all have the  
 22 essential ingredients to have a definition for risk  
 23 basis of reasonableness, but it's like we're at a --  
 24 we're running a marathon; we've gotten 10 yards short  
 25 of the finish line and we've stopped. And we looked

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1 at each other and say now what do we do? Well, you  
 2 cross the finish line; just do that risk assessment  
 3 and compare the two and then you've got a good basis  
 4 for reasonableness.  
 5 So we're excited to see even stronger  
 6 direction about what that risk analysis should be.  
 7 But that -- we're -- the public just hasn't gotten  
 8 there yet. And we're really encouraging them to move  
 9 forward there.  
 10 MR. JORGENSEN: Chris, one of the things you  
 11 just mentioned there in terms of how that risk is  
 12 calculated, you touched on that risk to the data that  
 13 you're protecting and the risk to the consumer. And I  
 14 think that's something that we see frequently missed  
 15 in that risk analysis because there seems to be a  
 16 preponderance of people that are saying, oh, okay, I  
 17 can transfer the risk; I can buy insurance for this.  
 18 And then the insurance will pay for all of that  
 19 downstream impact of the risk.  
 20 But you really haven't necessarily protected  
 21 the data that you've -- you are supposed to be  
 22 protecting. And so it's just an interesting look at  
 23 that can I transfer this or is it something I do have  
 24 to protect?  
 25 MR. CRONIN: Right. Or consider the harm to

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1 people directly. And when I'm doing litigation  
 2 support, one of the first questions I ask whether  
 3 among the defense or plaintiff's or regulator side is  
 4 I ask when we look at the risk analysis, did we  
 5 explicitly look at the kinds of harm that could come  
 6 to people and did we make investments that were  
 7 appropriate for protecting that harm?  
 8 When I do see a risk assessment, it's  
 9 usually what is the impact to business. That's  
 10 important. But that's not the only thing you should  
 11 be paying attention to. When we're talking about  
 12 cost/benefit analysis for reasonableness, our cost is  
 13 impact to business. Right? The benefit is what we  
 14 need to actually be sure we're taking a look at when  
 15 we're evaluating risk to the public. Because we're  
 16 seeing that missing, a lot of people are going to have  
 17 a hard time demonstrating reasonableness.  
 18 MR. LINCICUM: All right. Here's a question  
 19 I'll kind of ask the group, then. You talked about,  
 20 you know, the bad things that can happen with a  
 21 breach, and we certainly have all seen them in the  
 22 news. Those are sort -- those tend to be the very bad  
 23 situations.  
 24 What information do people have about the  
 25 more general risks to them? You know, what kinds of

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1 attacks are they most likely to face; how bad are they  
 2 going to be? Where do they get that information and  
 3 how does a company start to come to terms with what  
 4 their vulnerabilities are and where the risks are?  
 5 MR. RUBIN: Yeah, this is Sam. I can speak  
 6 to that. So my firm, Crypsis, does a tremendous  
 7 amount of data breach incident response. So we're  
 8 working with companies every day helping them respond  
 9 to these types of incidents. And what I would say is  
 10 that, you know, if companies kind of have their eyes  
 11 and ears open, there is a tremendous amount of  
 12 information whether it's threat intelligence,  
 13 publications from firms like mine and other great  
 14 infosec firms that are talking about the risks that  
 15 are out there; the things that companies are facing.  
 16 For example, right now based on our work,  
 17 what we're seeing is that the two greatest threats  
 18 facing financial institutions are business email  
 19 compromise -- that's threat actors getting into your  
 20 email and trying to perpetrate wire fraud or otherwise  
 21 monetize that access -- and ransomware. So those are  
 22 the two biggest threats that we're seeing impact  
 23 organizations. But for -- to answer your question,  
 24 you know, what companies can do is really just -- it  
 25 just takes kind of a level of effort to look to see

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1 what's out there and what your peers are facing, and  
 2 just to have that awareness.  
 3 MR. JORGENSEN: I think one of the  
 4 challenges there, though, is that you have to  
 5 understand what the risk is, because if you purely  
 6 look at it from that perspective of here's the attack  
 7 vector that the threat actors might be using, and you  
 8 said business email compromise or ransomware -- and,  
 9 Sam, I totally agree with you in terms of the type of  
 10 attacks that we're seeing. But from a risk  
 11 perspective, I think a lot of people miss the  
 12 incentives of the threat actors, and these attackers  
 13 out there have -- can get millions of dollars from a  
 14 successful attack. So from their perspective, they  
 15 look at it more like what's the easiest way to get to  
 16 the data that I'm going after? And where right now it  
 17 may be business email compromise, tomorrow it's going  
 18 to be something different.  
 19 And so if we go back to how do we do that  
 20 risk analysis and that risk assessment, it's got to be  
 21 around what kind of data do I have and then how do I  
 22 protect that, yes, against the current threats but  
 23 also how do I build out a program that appreciates  
 24 that the sensitivity of that data, the risk of that  
 25 data being compromised, and then how do I adjust my

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1 protections based on the evolving threat?  
 2 And that way, I'm not always chasing the  
 3 most current one, but I'm planning for the future as  
 4 well.  
 5 MR. MOLINA: At Drexel University and other  
 6 universities we're in the business of educating  
 7 people. So we educate our community members, faculty  
 8 and staff, students. I gave interviews with the  
 9 regional media outlets to educate the community about  
 10 some of the cyberthreats out there, some of them being  
 11 business cyberthreats; others are personal.  
 12 But to be honest, I would say that the  
 13 number one source of information for most people is  
 14 the regular media. And some media outlets are very  
 15 good at reporting what's going on and how to take  
 16 precautions in organizations and as individuals  
 17 against some of these cyberthreats. But others have  
 18 not. So it is our experience that many of our  
 19 community members are sometimes ill-informed about the  
 20 different threats. They may have heard time and time  
 21 again that there are phishing scams out there, and yet  
 22 they fall for them. They might have heard do not  
 23 click on this link or else ransomware will be  
 24 unleashed upon your organization's computers, and yet  
 25 they click on the link.

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1 So it's an interesting ongoing exercise that  
 2 requires -- it takes a village to educate the entire  
 3 society, but particularly our employees and our  
 4 clients in order to understand those cybersecurity  
 5 risks.  
 6 MR. JORGENSEN: You know, one of the things  
 7 that I know a few of us participated in the Sedona  
 8 Working Group 11 on data security and privacy. And  
 9 one of the things that that blend of legal and  
 10 technological experts, one of the things that Sedona  
 11 is looking at, and other organizations, is trying to  
 12 find that line, that cost/benefit analysis of risk.  
 13 And, Pablo, you must be facing this from a  
 14 university perspective. Companies like to maintain  
 15 historic data for whatever purposes -- reasons or  
 16 purposes. And I know Sam and Chris, all of us out  
 17 there face this information governance problem where  
 18 after a breach has occurred, the threat actors got far  
 19 more data than they could have. And, Pablo, my  
 20 background or experience at universities anyway has  
 21 been that they'll keep registration information for  
 22 not just students, but, you know, possible students or  
 23 applicants or people that you send scholarship  
 24 information to, going back 20 years.  
 25 And then we have to assess is that -- what's

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1 the value of that information or should I -- could I  
 2 get rid of it and reduce the risk to the organization?  
 3 And I think that really comes, Chris, back full circle  
 4 to what you were saying about risk analysis, risk  
 5 assessment, is you can just say, okay, well, you've  
 6 got antivirus, you've got these three controls,  
 7 everything's protected. But where we're trying to  
 8 encourage people to think about can I get rid of data,  
 9 what's my information governance process, and then if  
 10 I do have a business email compromise, if I do have a  
 11 ransomware attack that exfiltrates data, as well, then  
 12 if I can reduce the scope of that data that I'm  
 13 holding, then I have a much smaller exposure, much  
 14 smaller risk, and ultimately much smaller impact to  
 15 consumers.  
 16 MR. MOLINA: Well, in the case of  
 17 universities, we hold records for Drexel over 100  
 18 years; in the case of Georgetown where I teach, over  
 19 220 years. So you're right about -- that's the  
 20 policy, yeah.  
 21 MR. LINCICUM: All right. I'm going to move  
 22 on to the next topic, which is very tightly connected  
 23 to what we've been talking about, and that is kind of  
 24 the benefit side of the coin.  
 25 After you've assessed the risk and the

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1 magnitude of the risk, you then have to look at a  
 2 solution. In one way, the costs of those solutions  
 3 are fairly obvious. You'll know how much it costs to  
 4 implement. But part of the equation is also how  
 5 effective are they?  
 6 Sam, you said you've been involved in a lot  
 7 of, you know, common after incidents. How do  
 8 companies determine which protection pays for itself,  
 9 actually creates enough benefit to justify the cost?  
 10 MR. RUBIN: Sure. Yeah, I mean, the  
 11 unfortunate reality of what I see often is that it is  
 12 that knee-jerk reaction in a post-breach scenario that  
 13 makes it easy for leadership teams to see and  
 14 understand what additional controls they need to  
 15 implement because they're basically saying how can I  
 16 make sure this never happens again?  
 17 And so, you know, whether it's, you know,  
 18 insecure remote access, multifactor authentication,  
 19 poor identity and access management, whatever the  
 20 control gaps were, maybe no continuous monitoring,  
 21 that makes it easy to see what they need to add or  
 22 implement.  
 23 So that's one side of the coin. But where  
 24 we want to get to is kind of for companies that  
 25 haven't experienced a breach or incident in the recent

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1 past, like, how -- to your question, how can they  
 2 evaluate the benefit of implementing any given  
 3 control. And, you know, I think an answer is some of  
 4 the analysis that Chris was talking about where in a  
 5 risk assessment, it allows you to demonstrate  
 6 essentially the return on a control because a proper  
 7 risk assessment, what it will do is it will take a  
 8 probability of loss and a dollar impact and that  
 9 allows you to essentially demonstrate how a change or  
 10 implementation of control can kind of reduce the costs  
 11 of a breach and relatedly kind of demonstrate the  
 12 value or return on control.  
 13 So that's kind of the rigorous risk  
 14 assessment method way to assess the benefit. Not  
 15 always as Chris indicated at, you know, the top of the  
 16 hour what we're seeing companies do at this point, but  
 17 I think it's a place that they can get to.  
 18 Where we are right now, again, as companies  
 19 have been kind of having this knee-jerk reaction,  
 20 maybe the next layer of maturity is when they're using  
 21 these risk matrices where you have, you know, a  
 22 likelihood and an impact and the red and green and  
 23 yellow.  
 24 I had a matter recently where I was talking  
 25 to a CEO and he said how can I get more green on my

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1 chart? And that was his goal for, you know, reducing  
 2 risk, which, you know, it's better than nothing, I  
 3 would argue, but if we can get to that point where  
 4 we're doing something a little bit more rigorous, we  
 5 would all be better suited.  
 6 MR. JORGENSEN: You know, that's a really  
 7 interesting -- it's an interesting metric. And I  
 8 think from a CEO's perspective, that may be "the"  
 9 metric, is hey, what do I need to do to make this  
 10 thing green? And if you tell me that it's get these  
 11 business units in line with our security program, our  
 12 risk analysis or whatever it is, then that may be what  
 13 the CEO can do because ultimately they can't do it.  
 14 Should they have to understand the  
 15 intricacies of cybersecurity or do they know that all  
 16 they really have to do is help Pablo get to the  
 17 registrar's office and actually delete data that they  
 18 don't actually need anymore and help implement this  
 19 information governance program, and that will turn a  
 20 whole bunch of other things green?  
 21 So I think part of the challenge from  
 22 identifying what those key performance indicators are,  
 23 identifying what those metrics are, that can help  
 24 leadership manage the risk for something that they  
 25 really don't understand and maybe don't need to

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1 understand, but rather just need to support the effort  
 2 to implement those controls, but then appreciating the  
 3 benefits of those controls becomes really hard.  
 4 And I know, Sam, you're probably going to  
 5 talk about this, too, of trying to understand  
 6 something where the only benefit is something doesn't  
 7 happen. And it's really hard to explain that of, hey,  
 8 we won; there's been no incident.  
 9 MR. RUBIN: Yes, right. Or companies really  
 10 -- you don't get a bonus for not getting hacked,  
 11 right? So, yeah, if that's your metric of success, it  
 12 can be very hard. And, you know, when a CFO looks at  
 13 that and they're looking at their profitability, you  
 14 know, information security essentially just becomes a  
 15 cost center. And so without a way to demonstrate the  
 16 benefit, you know, we see things get cut or just a  
 17 failure of, you know, whether it's a CISO or director  
 18 of infosec to persuade his executive team to add those  
 19 necessary controls.  
 20 MR. MOLINA: And risk analysis is very  
 21 industry- and context-sensitive. Even though we're  
 22 here discussing these issues in the context of  
 23 financial services and the Federal Trade Commission,  
 24 the truth of the matter is that there are a great  
 25 variety among different financial services

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1 institutions.

2 We're considered one as a university because

3 of the disbursement of financial aid and other

4 transactions that we perform and accomplish for the

5 community. So for that it is very important for us to

6 curtail and manage the risk of economic losses, for

7 example. But even more important than that is to

8 protect the brand name of the institution. Those six

9 letters that read Drexel are worth more than the

10 regulatory fines or some of the financial losses that

11 I may experience.

12 Because, for example, we have really

13 outstanding cybersecurity programs. If we are hacked,

14 and it is reported that we're hacked as most

15 universities have been hacked in the past, then some

16 of the students or faculty members who were thinking

17 about joining our cybersecurity programs are going to

18 say I don't think that these guys, they have their act

19 together very well, so we might as well go to a

20 university that has yet to be hacked as opposed to one

21 that was hacked before.

22 And even within universities, we have very

23 different units. We have the financial aid units, but

24 we also have the ones that deal with patient data, DOD

25 data. So each one of those require a different risk

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1 analysis. So sometimes the devil is in the details.

2 MR. LINCICUM: You all have sort of touched

3 on this in one way or another, but I'd like to ask the

4 group. With your experience in various ways looking

5 at company security, what's your general impression

6 either in certain fields or in certain areas that

7 you're familiar with or generally, where are

8 businesses with data security?

9 Are most companies where they need to be or

10 are you seeing a lag kind of universal or in

11 particular areas?

12 MR. JORGENSEN: You know, it's interesting

13 that I think most companies are aware of something

14 called cybersecurity at this point, as we're doing

15 incident response work, as we're doing proactive

16 security, whatever it may be. We're certainly not

17 having to explain that data exists in the cyber world

18 and that threat actors are trying to get it. I mean,

19 you'd have to be under a rock if you haven't read a

20 news story about that type of attack recently.

21 But one of the big challenges that we're

22 seeing, and maybe the next big challenge for industry,

23 is that it's more and more difficult for them to apply

24 that across the various business units. So somebody

25 -- the university goes, hey, I have a CISO and

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1 therefore I'm okay. But not recognizing that maybe in

2 a university perspective, research and development is

3 off doing their own thing, or in a corporate

4 perspective sales can pretty much do anything they

5 want because that's a revenue source and if they say,

6 well, I didn't have multifactor authentication in

7 place because it lost a deal, or then I can't

8 communicate because I have this mail filter in place.

9 And so the business unit pushback tends to

10 still win and that makes it hard to implement those

11 security controls even if you have this risk analysis

12 or risk assessment done. So that's one of the things

13 that we're seeing, is that businesses are starting to

14 understand security and starting to understand the

15 ideas, but implementing it across all the business

16 units is still difficult.

17 MR. CRONIN: Yeah. David, I'm going to

18 throw in there, too. Serge is exactly on point. And

19 organizations are behind, right? So at HALOCK, we're

20 going into organizations of all types and sizes, and

21 as a rule they're all behind.

22 Information security is a big challenge, and

23 financial services often try to drive things by a

24 dollar basis. So there's actually something working

25 actively against the Federal Trade Commission's

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1 interest in getting to reasonable security, and it's

2 something to be very aware of as you move forward with

3 the next steps of the Safeguards Rule. And that's

4 that -- and most of us on the panel here are

5 consultants of one form or another, but there's a

6 brand of consultancy that's a real problem and it's

7 actually pushing against this definition of

8 reasonableness.

9 So we have consultancies that go out. I

10 mentioned maturity models before, where someone might

11 be graded one, two, three, four, five. Five is, you

12 know, you're innovating, and one is, oh, you're sort

13 of ad hoc. And we have organizations going in with

14 these maturity models telling their clients, get to

15 three, get to three. Because three is where your

16 peers are. And three basically means you've

17 implemented your controls, but you're not testing and

18 improving them, and you're not innovating in any way,

19 you're not taking care of root cause problems. You've

20 just got evidence you implemented your controls.

21 And when you talk to these consultants who

22 say get to three, you ask why do you say that? Well,

23 that's where their peers are. But their peers are

24 there because you tell everyone to get to three.

25 You're forcing a mediocre quality of information

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1 security.

2 So there is an aspect of the business that's

3 pushed by a certain level of we've got to make the

4 clients happy. If we tell them they have to get to

5 five, they'll go find someone else who will tell them

6 to get to three. And this is a real economic driver

7 that pushes organizations away from thinking about

8 what is reasonable.

9 The irony here is that if you actually are

10 thinking about what's reasonable and you're taking

11 this risk-based approach, you've got the challenges

12 that we just described earlier. We've got the costs,

13 we know what those are; the invoices come in. Right?

14 The salespeople tell us what the number will be. The

15 benefits, that's hard to figure out. This is a big

16 problem.

17 So in order to help people get through these

18 economic drivers, away from thinking about what a

19 reasonable security control would be, HALOCK worked

20 with the Center for Internet Security and just

21 developed this document called Center for Internet

22 Security's Risk Assessment Method, CIS-RAM. It's

23 freely available for anybody. But it helps you do

24 this evaluation where you can say what are my

25 financial costs, what are the costs and benefits to my

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1 mission, the reason why we engage in risk to begin

2 with? What are the costs and benefits to the

3 individuals who are at risk in my organization and to

4 get people to systematically think about this.

5 So what we're seeing as a real driver away

6 from the right behavior is just the economics of

7 trying to have a happy client in the field causing

8 people to do things other than think about reasonable,

9 because they haven't quite figured out what that

10 process is.

11 And I think the FTC has a real opportunity

12 here with this round of the Safeguards Rule to tell

13 people, by the way, what we mean by reasonable, this

14 is a cost/benefit analysis. So think about the costs

15 to your mission, your objectives, why you're in

16 business and your obligation to protect others with

17 and without the safeguard and we're going to figure

18 out whether the costs and benefits balance.

19 So that's part of what we're seeing as a

20 challenge that gets people away from doing the right

21 thing and something that I think the Safeguards Rule

22 could help people get back on the right track.

23 MR. MOLINA: One of the ways in which we

24 measure the progress we made in many aspects of

25 economic activity is we'll look at the investment

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1 levels. Ardent (phonetic) reported late last year, on

2 average U.S. organizations are spending between 5

3 percent and 8 percent of their technology budgets in

4 information security; as low as 2 to 4 percent in

5 manufacturing businesses, and as high as 10 to 15

6 percent financial services, which is quite a wide

7 range between 10 and 15 percent.

8 What we don't get from those numbers is

9 whether we're making a good investment with that

10 money. Just because you're buying the most expensive

11 advanced firewall does not mean you're protecting, as

12 Serge mentioned before, the data that is critical to

13 your organization, or as Sam mentioned before, that

14 you're addressing the threats that are lingering out

15 there.

16 So we still don't have enough research and

17 enough actuarial information to understand the risks

18 very well but also to understand whether or not what

19 we're spending in cybersecurity is really taking us to

20 the level that we should be at. And the suspicion

21 that most of us have without hardcore research is that

22 we're really falling behind the bad guys. And proof

23 of this are the mounting losses that come from

24 cybercrime.

25 MR. RUBIN: Yeah, I agree with that.

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1 MR. JORGENSEN: You know, it's interesting

2 -- go ahead, Sam.

3 MR. RUBIN: Okay, sure. Yeah, I agree with

4 those comments. And just, you know, based on what

5 I've seen out there often is sometimes you see strong

6 investment in tools, right? Like, you know, investing

7 in an endpoint detection and response or putting in a

8 SIM, but without consideration of the people that you

9 need to support those tools.

10 So, I mean, just equally important is the

11 cybersecurity team to support ongoing security

12 operations, to provide that continuous monitoring to

13 look at the telemetry coming from your endpoints, to

14 look at the logs.

15 And so just, you know, back to the question,

16 David, of what we're seeing out there, that's a huge

17 shortcoming that I'm seeing in the field. Another one

18 you know, along the lines of what you were saying,

19 Serge, is that divergence in business groups, I see

20 that also with organizations moving to the cloud and

21 to SaaS, you know, especially in this COVID time where

22 we're all working remotely, you know, from our

23 laptops. You know, some of us, you know, may be

24 engaging in a little bit of shadow IT when we

25 shouldn't be, looking for applications to help us get

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1 our job done and organizations having this kind of  
 2 legacy protection model of, you know, the firewall and  
 3 I'm going to protect my employees kind of hiding  
 4 behind the corporate local area network. And what  
 5 they're not doing is kind of protecting the cloud  
 6 applications, protecting the SaaS applications, like  
 7 Office 365, and protecting the endpoints.  
 8 So I think that that's a huge gap right now  
 9 and area of focus. So, again, you know, cloud, SaaS,  
 10 and then obviously having the right people.  
 11 MR. JORGENSEN: And I think, Sam, you  
 12 just touched on it, too, where companies are thinking  
 13 they can leverage the risk assessment that's been  
 14 done for their SaaS provider or their cloud solution.  
 15 And I can't tell you how many times I've gotten the  
 16 obligatory, well, everything's secure because I have  
 17 it hosted in AWS and here's Amazon's SOC 2. And I'm  
 18 looking at it going, I appreciate that their  
 19 information is secure, but what about your  
 20 information? How is that working for you?  
 21 MR. RUBIN: That's right.  
 22 MR. JORGENSEN: So it is one of those very  
 23 big challenges, yeah.  
 24 MR. LINCICUM: Let me go ahead and move on  
 25 to the next question, something that came up I think

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1 Chris was talking about how certain consultants will  
 2 have a certain approach. And that's a question I have  
 3 with a company that is starting this process of  
 4 setting up a program or updating it based on a new  
 5 rule or new standard. How do they determine what they  
 6 should be doing? I mean, a consultant will come in.  
 7 Are there standards that a consultant will be working  
 8 towards? Are there qualifications that tell you, oh,  
 9 this person is going to get you in the right place?  
 10 Or are you just kind of doing it one at a time on  
 11 people who come through your door? What standards are  
 12 there out there?  
 13 MR. JORGENSEN: I'll tell you one of the  
 14 most powerful pieces that we've been able to use to  
 15 address that question is your own FTC publication on  
 16 cybersecurity basics and just putting that out there  
 17 and saying, hey, here's a cybersecurity basic book; go  
 18 through these scenarios in here of FTC actions and  
 19 things that have happened already and make sure that  
 20 your programs are addressing those areas, because I  
 21 think something that that does is it really helps  
 22 people understand that even if I have anti-virus and  
 23 even if I have -- I'm being told that I have DLP --  
 24 and going back to Chris' point of, it's a three,  
 25 therefore it's implemented and I have a policy for it,

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1 but it got turned way down and it's now ineffective  
 2 because it started blocking all of my outbound mail  
 3 because I use a nine-digit number that looks like a  
 4 social security number, but it's not really. So I  
 5 turned down that control or I didn't put that control  
 6 in place.  
 7 So in terms of being able to explain the  
 8 impact and some of the considerations with a bunch of  
 9 war stories, I think that cybersecurity basics manual  
 10 is -- has been incredibly useful.  
 11 MR. LINCICUM: Good to hear.  
 12 MR. MOLINA: There are others. We all use  
 13 the National Institute of Standards and Technology  
 14 cyber controls. They have been very helpful. But  
 15 also, for example, as I mentioned, many of these  
 16 decisions are context- and industry-sensitive.  
 17 So, for example, those of us in higher  
 18 education, we get together through an organization  
 19 called Educause. And many of us belong to the Higher  
 20 Education Information Security Council. So there we  
 21 develop the risk analysis and we develop frameworks  
 22 that are very good for higher education. They map to  
 23 the other controls, they map to the NIS controls and  
 24 they map to the CIS controls and many of the other  
 25 ones we discussed, but they have been tailored for our

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1 own industries.  
 2 So the interesting part would be to work  
 3 with partners. I would suggest particularly for  
 4 organizations that are not mature in this field to  
 5 work with partners and vendors who have a certain  
 6 specialization in the financial services industry  
 7 because they can provide that nuanced approach to  
 8 cybersecurity and risk analysis that are going to make  
 9 them very, very effective in those efforts.  
 10 MR. CRONIN: Yeah, Pablo's right that the  
 11 industry-adjusted approach is an important thing to  
 12 consider. Now, we don't have one information security  
 13 control standard per industry, right? But there are a  
 14 variety of security control documents like ISO 27002,  
 15 NIST 800-53, which is more detailed, but also leaves a  
 16 lot to the imagination of the reader. CIS controls  
 17 can be very specific and practical. There are a lot  
 18 of these control sets that people use.  
 19 What's interesting is when you look at the  
 20 instructions for each of these controls, they all tell  
 21 you to do risk analysis. This is one of the really  
 22 important things that FTC is doing with the proposed  
 23 changes to the Safeguards Rule, by getting more  
 24 specific about what this means, because no matter what  
 25 control set you look at, you're going to see things

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1 that just can't be applied.  
 2 We had a client, a hospital, that was --  
 3 they were fed up with their security team, their  
 4 internal security team, because the internal security  
 5 team was saying use multifactor authentication; you  
 6 must do it. Now, that sounds like of course you  
 7 would; you've got it in the proposed rules. It was  
 8 driving the physicians crazy because they would be in  
 9 emergency situations and they wouldn't have their  
 10 second factor with them, you know, where's my phone;  
 11 I've got to get in to get this patient's record; she's  
 12 having an allergic reaction; where's her file? It's  
 13 on the system, but I don't have the second factor;  
 14 what am I going to do?  
 15 The hospital has a mission, right, and the  
 16 mission is patient care outcomes. The patients have  
 17 to come out healthier than they were before or they  
 18 failed their mission. And physicians were pushing  
 19 back saying your security control of multifactor  
 20 authentication is hurting our mission. You're  
 21 creating -- in other words, you're creating a risk to  
 22 our mission.  
 23 So these control standards, when you look at  
 24 the NIS risk management framework and the  
 25 cybersecurity framework, and you look at CMMC, this

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1 new pending standard that's coming out for suppliers  
 2 of the Department of Defense. You look at what's  
 3 coming out from the FTC since you've uttered a word  
 4 about this. You have to analyze the risk.  
 5 I say that you use whatever control standard  
 6 looks like what you can do with your business, what's  
 7 practical with your people and your technologies, you  
 8 have to have that standard of care. But then those  
 9 control standards are going to be hard to fit and hard  
 10 to negotiate unless you have a real clear  
 11 understanding of what that risk is.  
 12 MR. RUBIN: Yeah, I agree with that, Chris.  
 13 I would sum it up by saying these frameworks, you  
 14 know, there's a lot of them out there, obviously  
 15 different ones that apply to different industries.  
 16 You know, you pick the ones that are right for your  
 17 organization, your industry. Get the fundamentals as  
 18 you're saying but then leverage the risk assessment to  
 19 get -- to assess where you are in that gray area of  
 20 controls that you may not have, you know, economic  
 21 resources or time to implement all of them. And the  
 22 risk analysis helps with that gray area.  
 23 MR. CRONIN: And, David, just one quick  
 24 point on a draft commentary, on the recommended -- on  
 25 the proposed rule change is this concept of the CISO

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1 signing off on an exception. So if I've got  
 2 multifactor authentication, unless the CISO signs off,  
 3 one real big problem we've got in the industry as well  
 4 is this concept of risk acceptance without someone  
 5 knowing what risk they're accepting.  
 6 We hear it a lot. Why did this breach  
 7 happen? Well, we didn't do X, Y or Z. Why? Well,  
 8 they accepted the risk. Was it your risk to accept or  
 9 was it someone else's?  
 10 One thing I'd recommend going into these  
 11 proposed rules is that, as you mentioned something  
 12 like encryption or multifactor authentication where  
 13 the CISO can sign off on an exception, that that  
 14 exception should be based on the risk evaluation and  
 15 to make that explicit. You can do it if you determine  
 16 that the likelihood and the impacts of the problem are  
 17 either acceptably low for all interested parties or  
 18 there's no safeguard that would be appropriately  
 19 burdensome given the risk.  
 20 So there's a way to inject that risk  
 21 reasonableness because there is an epidemic of CISOs  
 22 signing off on risks that isn't their risk to accept.  
 23 MR. JORGENSEN: One of the challenges also  
 24 is -- comes in under risk mitigation at the end of the  
 25 day, I think, but it's post-incident risk mitigation.

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1 So when you use that example of multifactor  
 2 authentication, it's one thing if that access provides  
 3 that physician with access to a certain part of the  
 4 medical record or for a certain number of medical  
 5 records or something like that. And we still look at  
 6 this as very black and white. So when you look at  
 7 risk analysis, risk mitigation, I think the knee-jerk  
 8 way to do that is to prevent a threat actor from  
 9 breaching the edge, from getting into an environment  
 10 at all.  
 11 And one of the pieces that's in a lot of  
 12 standards that we're talking about, and certainly in  
 13 some of the FTC guidance, is that discussion about  
 14 post-incident impact. And so it's much, much  
 15 different if the impact is limited and I detect things  
 16 quicker versus if I have a threat actor running around  
 17 in my environment for days, months, years, and able to  
 18 access anything they want.  
 19 So that would be another piece that I think  
 20 could use some highlighting in any sort of  
 21 publications or new regulations.  
 22 MR. LINCICUM: I want to make sure that we  
 23 get to ask some questions from the audience. I'm  
 24 going to move on to that now and maybe we can finish  
 25 up with one last question after we do that.

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1 We have one question. It's fairly lengthy,  
 2 so I'm going to try to parse it out as best I can for  
 3 us. It asks what role should a determination of  
 4 substantial harm and inconvenience play in the  
 5 determination of -- it says complaint requirements --  
 6 I'm wondering if they mean compliance requirements --  
 7 in the space, given that it's an integral part of the  
 8 rule both currently and as proposed?  
 9 So I guess it's asking, you know, how much  
 10 should you be looking at the substantial harm and  
 11 inconvenience and how much does that play a part? And  
 12 how does that standard affect the nature of  
 13 appropriate risk assessments, incident response and so  
 14 forth. So anyone who think they got that, please  
 15 answer.  
 16 MR. MOLINA: I'd love to, but I think that,  
 17 David, you are the lawyer here. Me, I have a doctoral  
 18 degree, but it's not in law. But I think that we  
 19 understand the issue of harm. I also serve on the  
 20 board of the Electronic Privacy Information Center in  
 21 Washington, D.C., and we work very closely at times as  
 22 friends of the FTC, sometimes in a more controversial  
 23 relationship trying to push on the boundaries on this.  
 24 The issue of harm for any data breach is  
 25 something that we have not solved. It's very, very

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1 difficult to prove harm to consumers because you  
 2 really don't know whether your data was exposed  
 3 because of the breach today or the one two days ago  
 4 from a different organization, or another one. There  
 5 are no fingerprints to data that tells you what data  
 6 caused the harm.  
 7 Hence, when you cannot address the issue of  
 8 harm. Of course, organizations, we don't want to harm  
 9 our constituents. We want to protect them, we want to  
 10 do business with them out of the goodness of our  
 11 heart. We also don't want to get into trouble with  
 12 the regulators, particularly not with the FTC or the  
 13 state attorney generals of any -- or the GDPR data  
 14 protection authorities in Europe. We just don't want  
 15 to do any of these things.  
 16 But the issue of harm is an almost -- a very  
 17 difficult one to tackle. And to my knowledge, there  
 18 have been no good solutions, not even on the other  
 19 side of the Atlantic with a much more advanced privacy  
 20 regulation and the GDPR.  
 21 MR. CRONIN: Yeah, I've got a slightly  
 22 different take on that. Pablo, I agree with you as we  
 23 look back. It's certainly hard to figure that out.  
 24 It's hard to sometimes use our imaginations, too.  
 25 But what we can say is there are certain

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1 risks that we're not going to take, whether I know  
 2 what the subsequent harm will be or not. And I know  
 3 that -- if I have a risk that could expose some number  
 4 of a kind of sensitive record, that's something I'm  
 5 not going to accept. And I might even equate that  
 6 with some level of harm my organization might suffer.  
 7 So even if we don't have a way to quantify that harm,  
 8 there are ways for us to say qualitatively I would not  
 9 want X amount of data of X type to go out, and I would  
 10 equate it with this much harm that I could suffer,  
 11 therefore, I'll put a control and that safeguards us  
 12 both to some level.  
 13 I think this is actually a good opportunity  
 14 for us to think about qualitative ways to talk about  
 15 risk, where quantitative methods are helpful for other  
 16 questions like dollars.  
 17 MR. LINCICUM: Okay. We have another  
 18 question, and it is also a very lengthy one. I'll try  
 19 my best to get to the meat of it so we can do  
 20 multiple. Okay, I'll see if I can paraphrase.  
 21 Basically, the question asks since the rule  
 22 would only affect customer information, information  
 23 that's actually connected to a financial transaction,  
 24 does that change how a risk assessment would be done.  
 25 And it gives an example of -- let's see, registration

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1 of student information that's not related to financial  
 2 aid may be held for a variety of purposes by a  
 3 university. And doesn't that affect -- you know, if  
 4 you only have to consider some of the information,  
 5 does that affect how you do the risk assessment, I  
 6 think is the meat of that question.  
 7 MR. MOLINA: I think I can take it since  
 8 student information, that seems to be under my  
 9 purview. Those are the things that I see. So I would  
 10 sign an exception for and accept the risk -- just  
 11 kidding. I would never accept the risk for anything,  
 12 thank you very much.  
 13 MR. CRONIN: That's very funny.  
 14 MR. MOLINA: But in academics, it's  
 15 sensitive. It goes back to what Chris and Serge and  
 16 some were saying that we have different business units  
 17 and business processes and data elements, and we have  
 18 to take a context-sensitive approach to those. So  
 19 you're absolutely right.  
 20 For example, student information is mostly  
 21 regulated by FERPA, the Family Education Rights  
 22 Privacy Act, whereas the financial aid transactions  
 23 that we're discussing under the Safeguards Rule are  
 24 mostly regulated by the Federal Trade Commission.  
 25 And by the same token, you mentioned the

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1 cybersecurity model maturity certification. A new one  
 2 for those of us who are Research I institutions doing  
 3 research with DOD, Department of Defense, funding. So  
 4 the interesting part is that a CISO and also as  
 5 executives of large, complex organizations, we have to  
 6 be able to synchronize all of those different  
 7 requirements and make sure that we came up with  
 8 umbrella risk analysis processes that take into  
 9 account all of those different regulatory  
 10 requirements.

11 So the answer is, yes, it's different how  
 12 you would protect the information for financial aid  
 13 based on the Safeguards Rule and other FTC regulations  
 14 than you would according to FERPA. Never do you want  
 15 to expose your community members information to the  
 16 outside world because it's not a good thing for  
 17 reputation or economic or regulatory reasons. But  
 18 it's true that this is different.

19 Now, there are some people that have tried a  
 20 very difficult approach. Let's say they have a  
 21 hospital and they say I'm going to make the entire  
 22 university HIPAA-compliant. And those people right  
 23 now are looking for a job because it is very difficult  
 24 to do that without spending inordinate amounts of  
 25 money and antagonizing everybody in the community. So

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1 most of us are doing that fine-grained security  
 2 approach where we're trying to fine-tune our approach  
 3 to this.

4 MR. JORGENSEN: But one of the challenges  
 5 there, I think, is that as you do that, that fine-  
 6 grained approach is making sure that you are  
 7 protecting the trusted to trusted edges there, because  
 8 that's where you run into issues with PCI. So we're  
 9 one of the 12 companies or so that does payment card  
 10 forensic investigations. And most of the incidents  
 11 that we see there start from -- at the trusted  
 12 environment and the rest of the company, and then they  
 13 move into the trusted environment in the cardholder  
 14 data environment. And then from there, manage to get  
 15 access to the data that the threat actors are looking  
 16 for.

17 So when you start trying to be too  
 18 dismissive -- and, Pablo, I completely understand that  
 19 this is not where you were going, but I think it's  
 20 something that is worth calling out because a lot of  
 21 companies have the attitude of, oh, I don't need to  
 22 protect it because it's not -- it doesn't fall into  
 23 this particular area or this particular regulation.

24 So it's not covered by the Safeguards Rule  
 25 or it's not covered by HIPAA or whatever, therefore

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1 it's okay; I'll apply this no security rule to it.  
 2 And then what happens is you end up with machines that  
 3 are connected to both environments or a trusted person  
 4 that's inside is then used to attack the area that's  
 5 supposed to be protected.

6 In hospital environments, nurses'  
 7 workstations or something that aren't supposed to have  
 8 any PHI on the workstation, but they have direct  
 9 access to everything that has PHI. So it's just --  
 10 you've got to be really careful about where you try to  
 11 draw those lines, and when you draw the lines,  
 12 understand that you have to still then protect that  
 13 barrier.

14 MR. LINCICUM: All right. Thank you very  
 15 much. All right. Here's a more of-the-moment topical  
 16 question for us. It's asking about the impact of  
 17 COVID-19 on the resources and capacity of companies  
 18 right now. It's asking should that be taken into  
 19 account in the rule. But I think let's ask more of a  
 20 -- as Pablo said, not an attorney, so let's get more  
 21 into the world of, you know, actual risk assessment  
 22 and data security.

23 How much is COVID-19 affecting companies'  
 24 ability to protect things? Is the crunch on resources  
 25 being felt so that it's harder to do the protection or

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1 is the awareness increasing? What effect has COVID-19  
 2 had?

3 MR. RUBIN: I can jump in here. So from my  
 4 perspective, what we're seeing is that there's been a  
 5 real strain on security operations teams that, again,  
 6 they were set up in what's now looking like a legacy  
 7 world where they're delivering their services to again  
 8 an organization kind of inside an office, and then  
 9 obviously that's having to shift to, you know, your  
 10 entire workforce being remote and how do you maintain  
 11 the right level of, you know, security operations,  
 12 continuous monitoring, when your users are connecting  
 13 to, you know, home networks as opposed to, you know,  
 14 behind your firewall?

15 And so that's been a burden that we've seen  
 16 companies struggle with is, you know, for example, we  
 17 worked with an organization recently that knew they  
 18 needed to upgrade their endpoint protection  
 19 application and, you know, normally while they could  
 20 have done that much more easily, you know, with  
 21 everybody on the corporate network, it's been a  
 22 struggle and a burden to try and touch employees  
 23 wherever they reside. So things like that are a  
 24 challenge from an operational perspective.

25 MR. CRONIN: Go ahead, Pablo.

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1 MR. MOLINA: So I noticed sadly we were  
 2 doing a little bit of a hybrid online learning, hybrid  
 3 remote work, until we moved to 100 percent remote. A  
 4 number of things happened. You know, first we went to  
 5 all Zoom sessions. And guess what? Then we got into  
 6 Zoom bombing incidents because the bad guys realized,  
 7 hey, this could be fun. And some of them were not  
 8 fun. Some of them were even illegal and required  
 9 collaboration with the FBI to report the culprits and  
 10 everything else.  
 11 Then we realized that people working at home  
 12 without peers on their side, multitasking, taking care  
 13 of their children. Some of them I imagine they  
 14 started drinking at 10:00 a.m. in the morning based on  
 15 some of their reactions and the things they did of  
 16 sending gift cards or small things like that. People  
 17 were tired. They were afraid reading the news and  
 18 everything else.  
 19 So I would say that people who are known for  
 20 good critical thinking, sometimes they were suspending  
 21 their critical thinking. So they brought us more  
 22 security incidents than we've seen before based on the  
 23 human factor. And the bad guys will take advantage of  
 24 the human factor because that has been done since the  
 25 beginning of human beings getting together in a social

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1 way, scamming each other out of food or tools or  
 2 anything like that.  
 3 So that is one part that we have seen right  
 4 here. That human element that has resulted into added  
 5 risk because well-trained people, people who once a  
 6 year are taking our security awareness training, all  
 7 of a sudden in the middle of the pandemic seem to have  
 8 forgotten many of the things they had learned, many of  
 9 the business practices that they have been following  
 10 before.  
 11 MR. CRONIN: Yeah, you're right. And I'll  
 12 just cap it off quickly because there's a -- there's  
 13 such a direct correlation between the way we behaved  
 14 in the pandemic and the way information security has  
 15 been happening.  
 16 HALOCK's business has been just thrust upon  
 17 with incident after incident after incident, taking on  
 18 just an immense number of incidents, because of the  
 19 stuff that we're talking about, people moving  
 20 remotely. And they're spending less on preventive  
 21 stuff. So we're not actually preventing the thing;  
 22 we're paying at the end of it when we're actually  
 23 getting infected. It's a very frustrating thing to  
 24 have this problem happen both in your public life and  
 25 in your professional life. But it's what we see

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1 happening.  
 2 Now, where it comes to organizations that  
 3 just don't have the resources or organizations that  
 4 must move for the sake of their consumers to do things  
 5 that are more risky now, the one thing we tell people  
 6 is if you cannot afford the security controls that you  
 7 were affording before, you're going to have to tell  
 8 people. And you may find that they're still going to  
 9 engage in that risk with you.  
 10 So if you're not able to meet a certain  
 11 deadline and you miss a security certification because  
 12 you've got -- be direct with your consumers and tell  
 13 them this. And I think the Federal Trade Commission  
 14 would be 100 percent behind this. You have to let the  
 15 consumers know the nature of the risks they're engaged  
 16 in when they're doing business with you. And it's not  
 17 always an easy thing to be honest, but it's the right  
 18 thing to be honest. And consumers are often very  
 19 understanding when they see that something is not  
 20 going right because, guess what, it's not going right  
 21 everywhere.  
 22 So our urge to our clients when they can't  
 23 afford the preventive measure is to say just be frank  
 24 with your consumers and business partners, let them  
 25 know what's happening or you're going to just make

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1 things worse for everybody.  
 2 MR. JORGENSEN: We have seen a driver  
 3 towards implementing solutions, though, that have been  
 4 on the table for a long time, too. And I think  
 5 everyone here has touched on some of those solutions.  
 6 And recently, though, I think the driver to implement  
 7 those solutions has gone up, and it's really raised  
 8 the level of awareness up to leadership, because where  
 9 you used to have to argue about multifactor  
 10 authentication and somebody would say, well, you know,  
 11 it's only 10 percent of our users are accessing  
 12 remotely, therefore, the risk is small.  
 13 Now with 100 percent of users accessing an  
 14 environment remotely, they're coming back and going,  
 15 oh, okay, well, I've accepted that risk for years  
 16 because I thought the risk was small. Now, I  
 17 understand that it really is large and I need you to  
 18 implement it in the next 15 days. And suddenly  
 19 they're willing to have that workforce impact and  
 20 willing to deal with some of those controls that I've  
 21 talked about, information governance and limiting  
 22 access to data and testing those choke points and  
 23 making sure that if people are accessing things  
 24 remotely, what do they have access to, and making sure  
 25 that they can't get to the entirety of the data set.

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1 And adding those controls in has, I think, increased  
 2 because of the pandemic response.  
 3 MR. LINCICUM: Great. We are just about out  
 4 of time, but I wanted to ask one last question. And  
 5 if you all could take about a minute answering a  
 6 fairly big question, but, you know, as best you can.  
 7 We've talked about how information security  
 8 is very particular for each company. It's going to  
 9 have different needs. But are there some information  
 10 security practices that are just so universal and so  
 11 easy to implement that they should be just considered  
 12 absolutely required if you were handling sensitive  
 13 information like financial information?  
 14 MR. CRONIN: Go ahead, Pablo.  
 15 MR. MOLINA: Chris, after you, please.  
 16 MR. CRONIN: Okay. Because I'm probably  
 17 going to say what you were saying because you've been  
 18 saying these things, too. I'm going to take a step  
 19 back and say let's not talk about each control that  
 20 should be expected because our risk analysis is going  
 21 to show us how to apply those things differently, in  
 22 different ways.  
 23 What I will say is you find the security  
 24 control standard that looks like it addresses the risk  
 25 that you've got in your organization and apply those

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1 controls the best you can. And where they're  
 2 difficult to apply, you do a risk analysis to see  
 3 whether you can accept the risk or whether there are  
 4 alternative controls that provide you the security  
 5 safeguards you need.  
 6 So those are the two things I say are  
 7 universal, a standard of care and a risk analysis  
 8 where you think of yourself and others and put the  
 9 risks in balance.  
 10 MR. MOLINA: So I believe that cybersecurity  
 11 is a little bit like human behavior in general. It  
 12 works better when you follow principles. So if you do  
 13 a principle-based information security, you know the  
 14 old standards we've been proposing from the OECD and  
 15 many other forums for many years: privacy by design,  
 16 security by design, something the FTC is very strong  
 17 about in enforcement, which I call hon-tegrity,  
 18 honesty and integrity, meaning do as you say, say as  
 19 you do so that you'll be transparent and consequential  
 20 in your actions. Things like encrypt in motion,  
 21 Encrypt at rest.  
 22 You know, things like encrypt in motion,  
 23 encrypt at rest, always there are general things. And  
 24 then from there you can draw into the specific  
 25 controls that tells you, you know, security awareness

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1 for your workers and your constituents and, sure,  
 2 firewalls and protect the credentials with multifactor  
 3 authentication. There's a plethora of different  
 4 controls. But if you act with a few guiding  
 5 principles, it's going to help you align all of your  
 6 efforts into some really impactful measures.  
 7 MR. JORGENSEN: I think one of the  
 8 challenges as we try to answer that question is -- it  
 9 was embodied by Chris and Pablo's response of, hey,  
 10 you have to look at the big picture. And certainly it  
 11 would be easy to say, yes, multifactor authentication;  
 12 yes, change your password.  
 13 Something I saw as early as two weeks ago,  
 14 one-two-three is not an acceptable password in 2020.  
 15 But if you really scale it up for a moment and said,  
 16 okay, how am I going to look at identity and access  
 17 management, and so then access to what, and the data  
 18 privacy and the implications of the data security and  
 19 data privacy around that access becomes a focal point.  
 20 So are there controls that are so basic that  
 21 you should have in place? Yes, I think we've covered  
 22 them here. But the problem is that those controls may  
 23 change over time and it's the controls that give  
 24 access to what then becomes part of that challenge.  
 25 So if I have remote access into the keys to the

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1 kingdom, then those controls that are so basic and you  
 2 have to appreciate that I can't have an open cloud  
 3 storage bucket or a database that's public-facing. So  
 4 those are those really basic controls and security  
 5 that should be in place. But it's hard to say  
 6 specific for what without that risk analysis that  
 7 Pablo and Chris were just talking about.  
 8 MR. RUBIN: Yeah. And I agree with  
 9 everything that's been said here, and that is the  
 10 driving kind of basis for risk assessment. So I think  
 11 instead of, like, prescriptive controls, you know,  
 12 because of the changing threat landscape and all the  
 13 variation in organizations, it's helpful to think of  
 14 things a little bit more conceptually, which in a way  
 15 -- not to kind of plug this too much, but in a way  
 16 it's what the -- it seems like the FTC Safeguards Rule  
 17 is trying to do when it's saying things like you have  
 18 to have governance. Like, that's just a fundamental  
 19 part of an information security program which, believe  
 20 it or not, a lot of organizations don't do.  
 21 You have to have a program, which is, again  
 22 -- it sounds like basics but that's what we're talking  
 23 about. You need some people that are experts to help  
 24 you out, whether it's to perform the risk assessment  
 25 or to perform the technical, you know, security

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1 operations. You need to protect your sensitive  
 2 information, which means you need to know where it is,  
 3 what it is; you need to have identity and access  
 4 management around it; you need to educate your people  
 5 about what the risks are and what the threats are that  
 6 your organization is facing. You need to protect your  
 7 organization in an ongoing basis with ongoing  
 8 monitoring, and you need to be cognizant of your  
 9 third-party risk.  
 10 I think those things aren't prescriptive  
 11 controls and are more kind of just baseline  
 12 fundamentals that will change depending on time and  
 13 threats.  
 14 MR. LINCICUM: It looks like maybe we lost  
 15 Sam, or maybe everyone. Hopefully not. I want to --  
 16 oh, everyone else seems to be there. Well, that was  
 17 unfortunate for Sam but fairly well timed in that we  
 18 are out of time.  
 19 I really want to thank everyone for your  
 20 time in both being on this panel and helping us  
 21 prepare for it. It was immensely valuable. And I  
 22 want to thank everyone for giving us some time  
 23 watching it.  
 24 We'll be taking a short break now and the  
 25 next panel will be at 10:45, about information

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1 security and smaller businesses. Thanks, very much.  
 2 Have a good one.  
 3 MR. JORGENSEN: Thank you.  
 4 MR. CRONIN: Thank you.  
 5 (Whereupon, a recess was taken from 10:32  
 6 a.m. to 10:47 a.m.)  
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1 INFORMATION SECURITY PROGRAMS AND SMALLER BUSINESSES  
 2 MS. MCCARRON: Good morning. Welcome to the  
 3 second panel of the GLB Safeguards Rule Workshop.  
 4 This morning, we're going to be talking with five  
 5 experts about information security programs and  
 6 smaller businesses.  
 7 I would like to introduce the five panelists  
 8 who will join me this morning. If you could all  
 9 please just wave or acknowledge when I introduce you.  
 10 I would like to begin by introducing Rocío Baeza. She  
 11 is the CEO of CyberSecurityBase. She's joining us  
 12 this morning from Chicago.  
 13 Next, James Crifasi. He's the COO and CTO  
 14 of Redzone Technologies here in the D.C. area.  
 15 Brian McManamon is the president of TECH  
 16 LOCK, and he's joining us this morning from Troy,  
 17 Michigan.  
 18 Kiersten Todt is the managing director of  
 19 the Cyber Readiness [microphone feedback].  
 20 And, finally, I'd like to introduce Lee  
 21 Waters, who's the IT manager of McCloskey Motors,  
 22 joining us from Colorado Springs, Colorado.  
 23 My name is Katherine McCarron. I'm an  
 24 attorney in the Division of Privacy and Identity  
 25 Protection at the Federal Trade Commission, and thank

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1 you very much for joining us.  
 2 I'd like to begin by picking up from where  
 3 we left off on Panel 1, where we talked about the  
 4 costs and benefits of information security programs.  
 5 As part of its public comment, in the first round of  
 6 the GLB Safeguards Rule's proposed -- comments about  
 7 the proposed amendments, the National Automobile  
 8 Dealers Association provided a technical cost study as  
 9 part of its comment. It was entitled the Average Cost  
 10 per U.S. Franchise Dealership, because as we discussed  
 11 earlier, auto dealerships are financial institutions  
 12 under the GLB Safeguards Rule and must comply with the  
 13 Safeguards Rule itself.  
 14 I'd like to begin with speaking with James  
 15 Crifasi. James, you're an IT service provider and you  
 16 did some work on this cost study. What can you tell  
 17 us about the requirements the study assumed and its  
 18 conclusions about the costs of those requirements?  
 19 MR. CRIFASI: Sure. So Redzone Technologies  
 20 helped NADA with portions of the study. NADA looked  
 21 for really costs across a number of different shapes  
 22 and sizes of dealerships. They also got real vendor  
 23 quotes from those specific dealerships to figure out  
 24 what is it currently costing them to do these  
 25 safeguards; what would it cost for a new provider to

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1 do them, or for their existing provider to add the  
 2 level of service required.  
 3 We can see from the numbers that they're  
 4 really quite large. And what we're noticing here is  
 5 that from a small/mid-sized business point of view,  
 6 they start becoming a little bit unaffordable here.  
 7 The cost structure that was used is actually quite  
 8 conservative. There's a couple of things that aren't  
 9 even considered within the study.  
 10 So, for example, the need for additional  
 11 staff is not part of this study. In our experience,  
 12 in working with small businesses, there's a great deal  
 13 of bringing systems to a current level of operation  
 14 required before you could even make use of these  
 15 safeguards or the technologies required to adhere to  
 16 them.  
 17 So those auxiliary costs are really not  
 18 within the study at all. Our belief is that based on  
 19 this study, really it will be probably double or  
 20 triple those costs to really get the value out of  
 21 implementing the different safeguards. I mean, it's  
 22 one thing to be able to say, you know, we've checked  
 23 the box, we put the system in place. It's another  
 24 thing to actually get the value out of it.  
 25 I know in Panel 1 that was something that

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1 was talked about a lot is not just have an expensive  
 2 firewall or not just have an expensive audit system,  
 3 but actually use it and make sure it's effective and  
 4 useful on a daily basis.  
 5 MS. MCCARRON: As a follow up, James, where  
 6 did you see -- when you were doing this study, where  
 7 did you see existing security in financial  
 8 institutions falling short of the proposed amendments?  
 9 And where were there already resources in place?  
 10 For example, the current rule, the current  
 11 Safeguards Rule, which the automobile dealerships  
 12 comply with, requires financial institutions to have  
 13 people in charge of their programs. And so can  
 14 businesses use existing personnel as the qualified  
 15 individual responsible for the program?  
 16 MR. CRIFASI: I think from what we've seen,  
 17 they definitely can. What is important, though, is it  
 18 needs to be a team effort. So not so much a specific,  
 19 single individual, but when we're talking about a  
 20 small and medium business and, you know, there might  
 21 be a very small IT staff or potentially almost no IT  
 22 staff for the business, we really need to see that  
 23 "qualified individual" be a mix of folks. Sometimes,  
 24 it's going to be someone on the operations or finance  
 25 side; possibly outsourced consultants such as us or

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1 one of the other panelists. You know, that kind of  
 2 team effort is what's really important to have the  
 3 smaller businesses able to do that kind of qualified  
 4 individual task list.  
 5 There's one level where, you know, there's  
 6 advice needed that is coming from someone experienced  
 7 in security, but there's another requirement for  
 8 enforcement. And that enforcement is really where we  
 9 need a team effort.  
 10 What we've definitely found is that if the  
 11 business is not involved and this is considered an IT  
 12 project, the effectiveness is going to go way down.  
 13 And so really all of the business needs to be on board  
 14 with implementing these safeguards.  
 15 MS. MCCARRON: Thank you very much.  
 16 I would like to pivot now to asking Lee  
 17 Waters. Lee is an IT manager at an automobile  
 18 dealership in Colorado Springs and he has implemented  
 19 the existing GLB Safeguards Rule in his business.  
 20 Lee, I'd like to ask you how much would it  
 21 cost your dealership to implement the proposed  
 22 amendments to the GLB Safeguards Rule?  
 23 MR. WATERS: Well, we started by looking at  
 24 the costs for hiring outside help, the CISO and the  
 25 cybersecurity analyst. And we'd be looking at on

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1 average in our area about \$180,000 for a chief  
 2 information security officer; another \$76,000 for a  
 3 cybersecurity analyst. If we outsourced the work that  
 4 these two people would do, we would still be looking  
 5 between \$120,000 and \$240,000 a year.  
 6 On top of that, we'd have to implement  
 7 multifactor authentication; looking at about \$50 per  
 8 computer to implement something like that, or we could  
 9 go with an outside resource like Duo, which would cost  
 10 us about -- between \$3 and \$9 per user per year. And  
 11 with our dealership, that's about 55 users.  
 12 So we also have to implement annual  
 13 penetration testing. If you do a search on Google, it  
 14 says average cost is about \$4,800. I called a local  
 15 cybersecurity company that I've dealt with in the  
 16 past. For their external test, we'd be looking at  
 17 \$2,160. For an internal test, which is based on the  
 18 number of computers we actually have, we would be  
 19 looking at \$7,360 per test.  
 20 We would also have to update our physical  
 21 security. We'd be looking at about \$215,000 for extra  
 22 construction to enclose existing cubicles and build  
 23 offices for desks that are out on the showroom floor.  
 24 MS. MCCARRON: Thank you, Lee, for providing  
 25 this detailed information.

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1 I'd like to talk about the qualified  
 2 individual requirement of the proposed Safeguards  
 3 Rule. Several of you have mentioned the costs of the  
 4 requirement in the proposed amendment to  
 5 "designate a qualified individual responsible for  
 6 overseeing and implementing your information security  
 7 program." That is the language of the proposed  
 8 amendment. This person may be employed by you, by an  
 9 affiliate or by a service provider.

10 So the intention of that proposed language,  
 11 as my colleague David Lincicum mentioned earlier, was  
 12 to increase accountability and to lesson the  
 13 possibility that there would be gaps in responsibility  
 14 between individuals.

15 So, Brian, I'd like to ask you your opinion  
 16 of the costs versus the benefits of hiring a "single  
 17 qualified individual" to coordinate the information  
 18 security program at a small business.

19 MR. MCMANAMON: Sure, Katherine. In TECH  
 20 LOCK's experience, I think first and foremost it  
 21 depends on what the definition is of a qualified  
 22 individual. That individual would have to go through  
 23 the proper security training in order to help lead and  
 24 develop a security program within the organization.  
 25 In TECH LOCK's experience, most companies do

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1 not have that qualified individual. And the reason  
 2 for that is they're often -- they have a small IT  
 3 staff; they're often wearing multiple hats. You know,  
 4 you could be looking at an IT system administrator or  
 5 an IT director or a CIO that's basically serving as  
 6 that lead security person.

7 So what TECH LOCK has found that what works  
 8 best is a combination of outsourcing to a managed  
 9 services company. What that company can provide is  
 10 that security skill set and expertise, especially in  
 11 terms of potentially providing a virtual CISO role.

12 CISOs, as you heard, the average salary  
 13 that's out there can range anywhere from 180K; it  
 14 could be upwards of 400K. So providing that help and  
 15 assistance on a strategic basis, I think, is what  
 16 works best in transferring that knowledge internally.  
 17 What a virtual CISO can help do is develop that  
 18 security strategy and then help to implement that over  
 19 time.

20 MS. MCCARRON: Lee, can I follow up with you  
 21 then and ask what is the difference between what a  
 22 qualified individual means for a smaller, less complex  
 23 business? For example, can a small auto dealership  
 24 have a less experienced person in charge of a program  
 25 than a business with, say, a more complex network?

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1 MR. WATERS: Definitely. If the dealership  
 2 has any IT staff at all, they can take one of their  
 3 more experienced people and they would have to do some  
 4 research, maybe even call in a little bit of outside  
 5 help, but somebody could definitely handle that.

6 With some of the smaller dealerships that  
 7 only have, you know, maybe five people working the  
 8 lot, they may not have anybody with IT experience. So  
 9 they would have to go outside for help.

10 MS. MCCARRON: Thank you.  
 11 James, can I ask for your opinion as well?  
 12 What do you see in terms of what a "single qualified  
 13 individual" would mean in a small business versus a  
 14 business with a larger, more complex network?

15 MR. CRIFASI: Sure. In the small financial  
 16 institutions that we deal with, often the only IT  
 17 staff onsite is maybe PC support or end-user support  
 18 and there really is no IT management or upper level  
 19 IT.

20 In those cases, we typically are working  
 21 with the executive team. And what we found is that  
 22 that executive team can really be the qualified  
 23 person. Because at the end of the day if they have  
 24 the proper advice and support or an MSSP or a virtual  
 25 CISO, you know, that team is really who's going to

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1 enforce everything and make sure that the business is  
 2 adhering to the rules and the standards. Otherwise,  
 3 it's just something that someone external has told  
 4 them to do and no one really believes it or feels it  
 5 or lives it.

6 So, in our experience, if we really involve  
 7 it less as a find a single person and more as let's  
 8 involve the head of finance, the head of business  
 9 development, the head of operations and make that part  
 10 of the team, it's a lot more effective for the smaller  
 11 businesses.

12 MS. MCCARRON: Thank you.  
 13 Now, the proposed amendments to the  
 14 Safeguards Rule permit a financial institution to  
 15 bring that talent in-house and have an in-house  
 16 qualified person, or that role could be filled by an  
 17 affiliate or a third-party service provider.

18 Rocio Baeza and Brian McManamon are both in  
 19 the business of offering information security services  
 20 to smaller businesses. So I would like to begin,  
 21 please, with Rocio. What can you tell us about the  
 22 costs to small businesses of retaining vendors that  
 23 outsource those qualified individual services? Rocio?  
 24 You're on mute.  
 25 MS. BAEZA: All right. Can you hear me now?

81	<p>1 MS. MCCARRON: Thank you, yeah.</p> <p>2 MS. BAEZA: Awesome. Well, first of all, I</p> <p>3 just want to say thank you so much for having me on</p> <p>4 the panel. So there are two slides that I want to</p> <p>5 share. If we can go to the first slide.</p> <p>6 So when I think of cost models being</p> <p>7 available to small businesses, so these are the three</p> <p>8 models that I see. And for context, so</p> <p>9 CyberSecurityBase is in the business of serving</p> <p>10 chief compliance officers in the fintech space, and we</p> <p>11 are specialists in the online payday lending space, so</p> <p>12 my perspective is coming from that direction. So as</p> <p>13 we're thinking about, all right, how are small</p> <p>14 businesses that don't have -- don't currently have a</p> <p>15 CISO in-house and they're not expecting to appoint one</p> <p>16 in the next two to five years, how can they possibly</p> <p>17 conform with the proposed changes?</p> <p>18 So there are three models that I would want</p> <p>19 to point these individuals to. The first model is one</p> <p>20 where an existing member of the team is wearing the</p> <p>21 CISO hat. Now, I would expect that this individual</p> <p>22 sits in the compliance space of the organization and</p> <p>23 they're bringing in internal teams. So, for example,</p> <p>24 technology teams to supplement and to help develop and</p> <p>25 implement the program. And for any areas where there</p>	83	<p>1 So what we're looking at here is this is a</p> <p>2 table that has sample pricing for service providers</p> <p>3 that are in the market today that small businesses,</p> <p>4 that fintechs can tap into and comply with the</p> <p>5 proposed changes.</p> <p>6 So we have company A, they are app sec</p> <p>7 focused. They have a security-in-the-box solution,</p> <p>8 and they have a number of offerings depending on the</p> <p>9 level of support that the organization may need. We</p> <p>10 have an MSSP that, based on the size of the</p> <p>11 organization, they have different price points.</p> <p>12 And CyberSecurityBase, so we offer the CISO</p> <p>13 service as a professional service, and we also have</p> <p>14 pricing available to fit part-time virtual CISO</p> <p>15 support. So as you can see here, we have a range of</p> <p>16 \$200 a month estimate to \$15,000 a month. And, to me,</p> <p>17 this paints a positive picture that there are</p> <p>18 different options in the marketplace today. And I</p> <p>19 expect there to be more once the proposed changes are</p> <p>20 finalized.</p> <p>21 MS. MCCARRON: Thank you very much, Rocio.</p> <p>22 Brian, I would like to ask you as well. Can</p> <p>23 you talk us through your understanding of what the</p> <p>24 different options are for smaller businesses?</p> <p>25 MR. MCMANAMON: Sure. And I think there was</p>
82	<p>1 may be skill gaps, that can be supplemented with</p> <p>2 either certifications or some type of education.</p> <p>3 For the outsource model, so think of the</p> <p>4 situation where a small business is going to engage as</p> <p>5 a risk provider like CyberSecurityBase to wear the</p> <p>6 CISO hat.</p> <p>7 And the third one is going to be a hybrid</p> <p>8 approach. And I think this is going to be the best</p> <p>9 fit for small businesses. So think of the case where</p> <p>10 someone internally is accountable and is wearing the</p> <p>11 CISO hat and they are pulling in internal resources</p> <p>12 and external resources as needed. And these</p> <p>13 researchers are going to be pulled based on the</p> <p>14 preferences of the organization. Access to talent,</p> <p>15 timelines, any specific projects that have a specific</p> <p>16 deadline, and, of course, budget.</p> <p>17 So if we move on to the next slide, so we</p> <p>18 have some sample pricing for what some of these</p> <p>19 options might look like. And I've got to say, so when</p> <p>20 we're working with our clients, so they tell us that</p> <p>21 they love being able to to have a mixed and matched</p> <p>22 approach, having a hybrid approach where they may</p> <p>23 engage with us to provide say, for example, strategic</p> <p>24 direction, implementation support or outside</p> <p>25 assurance.</p>	84	<p>1 a slide that I'd like to show that represents those</p> <p>2 costs. Coming from what we've just heard, TECH LOCK</p> <p>3 provides these services from both an in- and outsource</p> <p>4 prospective as well as a hybrid prospective. We do</p> <p>5 need that -- or we think it's important to have that</p> <p>6 internal skilled security resource that can help</p> <p>7 implement a lot of the elements of a security program.</p> <p>8 So what you see here is sample pricing that</p> <p>9 TECH LOCK provides to our small/medium-sized business</p> <p>10 customers, all the way from -- if you see, the range</p> <p>11 there is starting with small at 25 to 250 endpoints</p> <p>12 for \$2K to \$5K per month. A medium-sized business we</p> <p>13 would designate as 250 to 750 endpoints for a \$5K to</p> <p>14 \$15K a month; a large, 750 to 1,000 endpoints at \$15K</p> <p>15 to \$30K; and then finally a very large organization</p> <p>16 can be anywhere up to 2,500 endpoints and up to \$50K</p> <p>17 per month.</p> <p>18 The type of services that TECH LOCK</p> <p>19 provides, and if you look at the revisions to the</p> <p>20 Safeguards Rule, some of the key elements of that rule</p> <p>21 is really around continuous monitoring, being more</p> <p>22 proactive with potential threats. So some of the</p> <p>23 services that we provide that address those issues are</p> <p>24 related to vulnerability management, endpoint</p> <p>25 detection and response, network and firewall</p>

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1 management, log-in SIM. And what's key there is all  
 2 on the back end we're providing 24/7/365 monitoring.  
 3 So it's that continuous monitoring to make sure that  
 4 you can not only detect those threats but also respond  
 5 to them very quickly.  
 6 And what TECH LOCK feels is this provides  
 7 really a holistic and comprehensive view of satisfying  
 8 the key elements of a strategic security program. And  
 9 if you compare those costs that I just showed to the  
 10 cost that a small/medium-sized business would have to  
 11 pay, they brought that technology in-house, those  
 12 resources and staffing in-house, you'd be looking at  
 13 multiple six figures, I think, as you saw earlier in  
 14 this panel.  
 15 MS. MCCARRON: Thank you. Now, one of the  
 16 questions that the Commission has sought feedback and  
 17 comment about is the definition of a small business.  
 18 And in the proposed amendments to the  
 19 Safeguards Rule, the Commission has suggested that in  
 20 order to reduce the burden on smaller financial  
 21 institutions, the proposed amendment would contain a  
 22 new section that would exempt smaller businesses from  
 23 certain requirements.  
 24 The exemptions would apply to financial  
 25 institutions that maintain customer information

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1 concerning fewer than 5,000 customers. Such financial  
 2 institutions would not be required to have a written  
 3 risk assessment. They would not be required to  
 4 conduct continuous monitoring or annual penetration  
 5 testing and biannual vulnerability assessment. They  
 6 would not have to have a written incident response  
 7 plan in place, or have a written annual report by the  
 8 CISO.  
 9 So, Kiersten, as a threshold matter, the  
 10 Commission seeks comment on whether the use of the  
 11 number of customers about whom a financial institution  
 12 retains customer information is the most effective way  
 13 to determine whether financial institutions should be  
 14 exempted, and, if so, whether 5,000 customers is the  
 15 appropriate number. So would you share with us your  
 16 thoughts about the definition of a small business?  
 17 MS. TODT: Sure, Katherine. Thanks very  
 18 much. And thanks also for the opportunity to  
 19 participate.  
 20 Just to understand the position from which  
 21 I'm coming, I run a nonprofit called the Cyber  
 22 Readiness Institute, which works with small businesses  
 23 in helping them improve their cybersecurity by  
 24 focusing on human behavior.  
 25 So I think there are really two questions at

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1 play here. The first is what you asked around what  
 2 the definition of a small business is for this  
 3 purpose, and what that definition fails to acknowledge  
 4 is that regardless of size, every small business is  
 5 part of a global value chain/supply chain under the  
 6 safeguard rules that we're talking about.  
 7 So to make that demarcation, I think, is  
 8 not actually appropriate because it doesn't allow or  
 9 account for the fact that every business has a role.  
 10 The challenge there, however, is that you cannot put  
 11 -- if you focus so much on the technology, I'd like to  
 12 go back to a couple of the points that James made,  
 13 which is particularly for small businesses you have to  
 14 focus on the culture. And when you don't have the  
 15 resources to allocate and bring in a CISO, and I think  
 16 Rocio had walked through a lot of the different  
 17 versions that we can use and I think that's important,  
 18 it's recognizing that small businesses have to do the  
 19 basics, and a lot of that really focuses on human  
 20 behavior. That ability to do the basics and to do  
 21 cyber hygiene should -- no business should be -- not  
 22 be accountable for doing that. Every small business  
 23 should have to do that.  
 24 But we also have to make sure that in  
 25 providing guidelines, while we may be able to provide

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1 very rigid guidelines for security, if small  
 2 businesses are then forced to do workarounds and don't  
 3 actually have the ability to follow them, that creates  
 4 an -- even more of an unsafe environment.  
 5 So to answer your initial question, I don't  
 6 think there should be a number on this. All small  
 7 businesses should be responsible for doing the basics,  
 8 but we have to really focus on the culture of security  
 9 and the human behavior element, particularly for small  
 10 businesses that don't have the resources to allocate  
 11 to some of these more technological requirements.  
 12 MS. MCCARRON: So, in your opinion, is such  
 13 an exemption appropriate at all, or should all  
 14 financial institutions regardless of size be required  
 15 to comply with all of the proposed amendments?  
 16 MS. TODT: I don't think size should be a  
 17 matter, but I don't think that the required amendments  
 18 really are appropriate for all small businesses. So I  
 19 think that all small businesses need to be held  
 20 accountable, but we need to work with small businesses  
 21 to help them and to provide resources that focus on  
 22 human behavior.  
 23 So I'll answer it in two ways that we should  
 24 not -- no small businesses should be exonerated. But  
 25 the rules need to be more flexible to address the

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1 cover and the range of small businesses.  
 2 MS. MCCARRON: Okay, thank you.  
 3 Brian, a follow up question: How does the  
 4 size of a financial institution and amount and nature  
 5 of the information that they hold factor into an  
 6 appropriate information security program?  
 7 MR. MCMANAMON: Yeah, I would agree that,  
 8 you know, just to chime in on the last question, I  
 9 think there are a minimum set of standards that need  
 10 to be adhered to by small businesses. The way TECH  
 11 LOCK views businesses and the way we scope the work  
 12 that we do is based on number of users, number of  
 13 endpoints, and then also number of sites and what  
 14 their processing environment looks like.  
 15 So if you think about, you know, servers,  
 16 workstations, laptops, the network footprint, any of  
 17 those elements in an organization's environment may  
 18 introduce a threat into that environment. So you have  
 19 to look at that total threat landscape.  
 20 From a data prospective, you know, when we  
 21 do audits on, for example, PCI or high trust, we  
 22 follow that data, right, all the way from the -- where  
 23 it comes into the environment and to how it's  
 24 protected at each step, whether it's storage or  
 25 processing all the way through to the back end. So

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1 data does come into play in terms of size.  
 2 And if you were to compare, for example, to  
 3 how PCI judges the size of an organization, you know,  
 4 they do it based on level of transactions that a PCI  
 5 data processor would process annually. So, you know,  
 6 for example, over 6 million transactions, it would be  
 7 designated that they would need to have an audit by an  
 8 external auditor. Very small businesses would just  
 9 have to go through what they call a self-assessment.  
 10 But the issue that TECH LOCK has seen with those self-  
 11 assessments, it's more of checking the box. Right?  
 12 And that's what we're trying to avoid here. We want  
 13 businesses to really go through that internal risk  
 14 assessment and make sure that they are implementing  
 15 the appropriate security controls for their  
 16 environment.  
 17 MS. MCCARRON: Lee, I'd like to follow up  
 18 with you about the issue of the size of a financial  
 19 institution and the nature of the information that  
 20 that financial institution holds, as a factor, into  
 21 the appropriate data security program that they put  
 22 into place.  
 23 Can you tell us from your experience whether  
 24 it's the number of employees or the number of  
 25 customers that you keep data about that's relevant to

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1 to your business?  
 2 MR. WATERS: Well, I don't think the type of  
 3 data really makes much difference as an attacker is  
 4 just going to go for something easy that he's going to  
 5 get a lot of information from. So the amount of data  
 6 would definitely have an influence on whether a  
 7 business is even going to be attacked or not.  
 8 The number of employees can also introduce  
 9 other risks. The more employees you have, the greater  
 10 you are at risk for either inside attacks or just  
 11 social engineering. So you have to be prepared for  
 12 pretty much everything from all sides.  
 13 MS. MCCARRON: James, how do you view the  
 14 risks of how cybersecurity events change based on the  
 15 size of a financial institution?  
 16 MR. CRIFASI: From our point of view, it's  
 17 the point of view of the risk that changes, but we  
 18 consider it pretty much equal risk. We have some  
 19 small businesses we deal with that just have an  
 20 enormous amount of consumer records, and so they might  
 21 have a few number of employees or a few number of  
 22 endpoints, but the amount of data available there is  
 23 just quite vast. And so from that point of view, we  
 24 would say, okay, they need to follow all of the  
 25 safeguards, right? Because they just have such a

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1 massive amount of data, they can't get away with just  
 2 doing the basics.  
 3 On the flip side of that, we see small  
 4 businesses where really they just need to focus on the  
 5 basics. I know in Panel 1 they talked a lot about  
 6 doing risk assessments and assessing what data is  
 7 there, where it is and how it is. And there's a point  
 8 of view for a small business that says if they get  
 9 hacked at all, it doesn't matter if they lose employee  
 10 data, financial data, consumer data, they're probably  
 11 going to go out of business.  
 12 So there's a shift to me that says that when  
 13 we look at a small business and we look at something  
 14 like the safeguards, that doing the basics, or as  
 15 Kiersten mentioned, changing the culture and making  
 16 sure people are getting educated and understand  
 17 security becomes more important, because really they  
 18 can assume the level of risk, they can assume that at  
 19 some point they will get an intrusion or malware or  
 20 ransomware. And there's a lot of money that can be  
 21 spent better doing proactive security against these  
 22 types of attacks or cyber hygiene versus measuring a  
 23 risk when really we can just assume it in most  
 24 businesses, especially on the small/medium size.  
 25 MS. MCCARRON: Thank you.

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1 Kiersten, what is your view about how risks  
 2 of cybersecurity events change based on the size of  
 3 the financial institution?  
 4 You're on mute.  
 5 MS. TODT: You still do this after three  
 6 months of Zoom. I still think that the smaller the  
 7 business, the more impact it can have. So one of the  
 8 things that one of our member organizations,  
 9 Mastercard, has researched is that 56 percent of  
 10 organizations can suffer a breach by a third party,  
 11 meaning that there is a greater attack surface.  
 12 Sixty-seven percent of small businesses fail to  
 13 survive a cyber breach.  
 14 And so when we look at these numbers, we  
 15 understand that there is a much smaller, if any,  
 16 safety net for small businesses. So the impact of a  
 17 breach, the impact of an event, can be much more  
 18 devastating. And that's why when we talk about  
 19 prevention, we're also talking about resilience.  
 20 Because what is so important -- and this is going back  
 21 to your other question, why every business needs to  
 22 have basic protocols in place, because you don't want  
 23 a breach to be devastating and to actually take down  
 24 the business.  
 25 By focusing on resilience, what we're doing

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1 then is minimizing the impact of an event, containing  
 2 it, and ensuring that it causes the least amount of  
 3 disruption to that small business. And so as we look  
 4 at overall cybersecurity protocols, it's really  
 5 critical that we both focus for small businesses on  
 6 prevention and what they can do, but also helping them  
 7 to respond and react, which is why instant response  
 8 plans and those others elements are the basics for all  
 9 small businesses to be engaged in.  
 10 MS. MCCARRON: Thank you.  
 11 Rocio, do you have thoughts on the risks of  
 12 cybersecurity events, how that changes based on the  
 13 size of the financial institution?  
 14 MS. BAEZA: Sure. So I think size of a  
 15 financial institution is a factor, but I don't think  
 16 it's the one that we should be paying attention to. I  
 17 think the ones that are better indicators for  
 18 cybersecurity risk are going to be two things: the  
 19 volume of consumer records that a financial  
 20 institution holds and also the rate of change.  
 21 So in the fintech space, it's awesome.  
 22 They're using technology and data to disrupt the  
 23 industry and provide services that haven't been  
 24 feasible in the past. And so there's a number of  
 25 integration points, right? So take the case of an

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1 online payday lender, we should expect them to have an  
 2 LMS to process loan applications, connections with  
 3 data vendors, and maybe an outsourced consumer  
 4 function, payment collection processing activities.  
 5 And then there's also services and IT systems that the  
 6 corporate teams are using to leverage the data and the  
 7 technology to better serve the consumer.  
 8 So, to me, because we have this web of  
 9 applications and systems both managed in-house and  
 10 outsourced, every time there is a change to any of  
 11 these environments, that is creating additional risk.  
 12 And that's elevated as we're seeing if the institution  
 13 is processing large volumes of consumer data.  
 14 So I think size of the financial institution  
 15 is a factor. I think the more critical ones are the  
 16 volume of consumer data that they hold and the rate of  
 17 change within their data processing environment.  
 18 MS. MCCARRON: Okay, thank you.  
 19 I'd like to move to a new topic, which is  
 20 the requirement in the proposed amendment that there  
 21 be reporting to the board of directors. And I'd like  
 22 to talk about this from the lens of a smaller  
 23 business.  
 24 The proposed amendment would require the  
 25 CISO or the qualified individual to record in writing

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1 at least annually to the financial institution's board  
 2 of directors or the equivalent governing body  
 3 regarding the following information: the overall  
 4 status of the information security program and the  
 5 financial institution's compliance with the Safeguards  
 6 Rule and material matters related to the information  
 7 security program addressing such risks such as risk  
 8 assessment, risk management and control decisions,  
 9 service provider arrangements, results of testing,  
 10 security events or violations, and management's  
 11 responses thereto, and recommendations for changes to  
 12 the information security program.  
 13 So for for financial institutions that do  
 14 not have a board of directors or equivalent, the CISO  
 15 must make the report to a senior official responsible  
 16 for the financial institution's information security  
 17 program.  
 18 Kiersten, the Commission requests comment on  
 19 whether the burden of this risk reporting requirement  
 20 outweighs the benefits of, number one, having the  
 21 governing body engaged in and informed about the state  
 22 of the financial institution's information  
 23 security program, and, two, creating accountability  
 24 for the CISO. So can you comment on that? And, also,  
 25 if you think the written requirement should have other

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1 requirements, please let us know.  
 2 MS. TODT: So I certainly think engagement  
 3 with any sort of senior leadership, whether it's a  
 4 governing body like a board or a senior executive on  
 5 security, is critical because this is not, as was  
 6 mentioned earlier, security, cybersecurity, should not  
 7 be restricted to one individual, to an IT department,  
 8 to an IT person. It really is now the responsibility  
 9 and accountability of every individual within an  
 10 organization to have an understanding of his or her  
 11 role in security.  
 12 So creating that culture, again, and having  
 13 that reporting requirement makes sense. But I would  
 14 like to adjust that word around reporting. It should  
 15 be a conversation. It should be a discussion and  
 16 ongoing -- I would argue that it should happen more  
 17 than once a year because this -- while there is an  
 18 accountability within an individual, again, the  
 19 organization has accountability.  
 20 So we're discussing this with a senior  
 21 executive. That senior executive has accountability  
 22 for the security of the organization. We've seen a  
 23 lot at the senior level where -- we saw it in the  
 24 Federal Government with the OPM breach where the  
 25 director at the time said it was no one's

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1 responsibility.  
 2 What we have to get to in changing that  
 3 culture is that it's actually everybody's  
 4 responsibility. And so having requirements to update  
 5 on what's going on on the number of breaches, on how  
 6 things are being responded to, where the challenges  
 7 are, that should be an ongoing discussion. And if the  
 8 catalyst for that is a reporting requirement, I think  
 9 there could be value in that, but it is not just  
 10 a static written report.  
 11 I would assert that it has to be a  
 12 discussion. And it's not a one-way discussion; that  
 13 it is about getting leadership involved and that  
 14 hopefully there is a relationship between the CISO and  
 15 the board or -- and the senior executive that allows  
 16 for improvement, that allows for adjustment and  
 17 evolution, because with cyber risk management, the key  
 18 here and the priority  
 19 should always be agility and flexibility to evolve  
 20 with the threat.  
 21 So the concern sometimes is when you have  
 22 compliance -- most of the time when you have  
 23 compliance requirements, they often can't keep up with  
 24 where the threat is going. And that's why risk  
 25 management, when it comes to an organization of any

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1 size, is critical.  
 2 MS. MCCARRON: I'd like to ask a followup to  
 3 Rocio on this one, which is speaking of the  
 4 communication between the CISO and the board, should  
 5 the board have to certify compliance with the rule?  
 6 MS. BAEZA: So I think that an annual report  
 7 to the board and then having the board report or  
 8 perform some type of certification, that can be used  
 9 as a way to ensure organizational accountability and  
 10 also accountability for the CISO. But I think that if  
 11 either of these two items, the annual report or the  
 12 certification, if they don't have the proper  
 13 guardrails I can see it quickly turning into a  
 14 burdensome administrative test that outweighs the  
 15 benefit of what we're trying to accomplish here.  
 16 So I think that in order to have effective  
 17 mechanisms, let's talk about the annual report first.  
 18 So if we're setting expectations for a 40-page  
 19 document to be presented to the board on an annual  
 20 basis, that's not going to be effective. Instead, if  
 21 we consider using a one-pager that summarizes the  
 22 items that are in the proposed changes, things like  
 23 the status of the program, identified high risks,  
 24 previous management decisions to identify the high  
 25 risks, and using that to funnel information up to the

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1 board so that they can say, yes, we're comfortable  
 2 with the program or, no, we're not comfortable and  
 3 being able to articulate between the board and the  
 4 CISO what that comfort level is, what that risk  
 5 tolerance is, I think that can be a great way of  
 6 raising organizational accountability and also  
 7 accountability for the CISO.  
 8 Now, if you think about the certification, I  
 9 think that if the certification piece isn't worded  
 10 carefully, it's going to be an administrative  
 11 burdensome task. So if the question -- if it's one  
 12 question that someone from the organization has to  
 13 submit so you can comply with the Safeguards Rule, do  
 14 you comply with the privacy rule, that's a very  
 15 generic question. So we have to be very specific.  
 16 Some examples are instead of asking a very  
 17 broad, generic question, let's get into specifics. So  
 18 on the risk assessment side, the question -- so these  
 19 would be yes-or-no questions. Do you have a written  
 20 risk assessment, yes or no; when was it last  
 21 completed; what's that date; when is the next  
 22 scheduled risk assessment scheduled for; very good  
 23 specifics.  
 24 The thing about the case of a third-party  
 25 vendor, there's an expectation to oversee service

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1 providers, making sure that they can develop and  
 2 maintain safeguards. Well, there's going to be very  
 3 concrete questions. Do you have third-party data  
 4 inventory? When was it last reviewed? When are you  
 5 going to review it next?  
 6 And by having a different structure around  
 7 the certification and also the annual report  
 8 requirement, they can set up guardrails so that the  
 9 organization is providing meaningful information.  
 10 It's very specific. And I think that that will be a  
 11 more effective approach of raising organizational and  
 12 CISO accountability.  
 13 MS. MCCARRON: Thank you very much.  
 14 I'd now like to turn to two of the  
 15 requirements of the proposed Safeguards Rule that are  
 16 specific to the technologies or the types of  
 17 information security protocols that are put in place.  
 18 The first one is multifactor authentication.  
 19 The proposed amendment would require financial  
 20 institutions to implement multifactor authentication  
 21 for any individual accessing customer information.  
 22 Multifactor authentication, according to the proposed  
 23 amendment, shall be utilized for any individual access  
 24 in your internal networks that contain customer  
 25 information unless your qualified individual or CISO

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1 has approved in writing the use of a reasonably  
 2 equivalent or more secure access control.  
 3 Brian, I'd like to ask you for your comments  
 4 on this approach to requiring MFA for any individual  
 5 accessing customer information in an internal network.  
 6 MR. MCMANAMON: Sure. Number one, you know,  
 7 TECH LOCK fully supports this requirement. It is  
 8 absolutely critical that organizations have  
 9 multifactor authentication in place for accessing  
 10 their systems or any of their applications.  
 11 To support that, TECH LOCK has implemented  
 12 MFA for a number of our small/medium-sized business  
 13 customers. The product that we normally use and we  
 14 resell is Duo. So what I've done is pulled some  
 15 pricing from Duo's website just to get an idea of what  
 16 it would cost a SMB to implement.  
 17 As you can see there, there's four different  
 18 categories of cost all the way from free for up to 10  
 19 users to \$3 per month. And what that adds is some  
 20 additional security policy checks. \$6 per user per  
 21 month is the most recommended that has more robust  
 22 device trust checks in place; more robust policy  
 23 enforcement, and then all the way to \$9 per use per  
 24 month. That's their premium subscription that has the  
 25 most robust device trust checks. It also provides

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1 application policy enforcements. And then you can  
 2 implement single sign-on for some, their access to  
 3 internal corporate resources.  
 4 MS. MCCARRON: Thank you very much for that  
 5 information.  
 6 James, I'd like to ask you as well for your  
 7 thoughts on the proposed amendments requirement that  
 8 financial institutions shall use multifactor  
 9 authentication.  
 10 MR. CRIFASI: Our point of view is we fully  
 11 support multifactor as well. When we're pulled into  
 12 an environment that has had some kind of security  
 13 incident or data loss or ACH wire transfer fraud, so  
 14 far in the last, say, 12 to 18 months every single one  
 15 would have been stopped by having basic multifactor  
 16 authentication.  
 17 So from our point of view, it's a good basic  
 18 business practice at this point regardless of the  
 19 Safeguard Rules or PCI or any other requirement. It's  
 20 just a good business practice to have, just to protect  
 21 the internal information as much as it is to protect  
 22 the company's own internal information as much as it  
 23 is to protect their consumer information.  
 24 I think the one thing that we see that  
 25 becomes an issue is, you now, simply buying a

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1 multifactor doesn't really give you a solution there  
 2 because you have outsourced dealer management systems  
 3 or loan management systems and you need to make sure  
 4 the multifactor will actually take care of all of the  
 5 service providers as well as remote access into your  
 6 environment.  
 7 So I think flexibility there is really  
 8 important. But at the same time, the definition  
 9 really needs to encompass all of those kind of  
 10 auxiliary and external providers, some of which we  
 11 know from helping a lot of customers, they won't  
 12 support it. You know, the dealer management system or  
 13 associate management system, or core banking system,  
 14 they won't support the multifactor.  
 15 And so we, as security technologists, we  
 16 have to come up with an alternative method to secure  
 17 that high-risk area. And it is available, it is  
 18 possible, it's things that can easily be done. Those  
 19 service providers don't always like it, but it's a lot  
 20 cheaper than, let's say, telling a small business go  
 21 change out the dealer management system that you've  
 22 used for the last 20 years. The cost on that is going  
 23 to be much more than that business can, you know,  
 24 adapt to.  
 25 So I think multifactor is great, but we need

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1 to really consider those third parties and service  
 2 providers in scope of that requirement.  
 3 MS. MCCARRON: A good point, thank you.  
 4 Now I'd like to turn to encryption, which is  
 5 the other specific callout in the proposed Safeguards  
 6 Rule -- amendment to the proposed Safeguards Rule.  
 7 The proposed amendment would require  
 8 financial institutions to protect by encryption all  
 9 customer information held or transmitted by you both  
 10 in transit, over external networks and at rest.  
 11 To the extent that a financial institution  
 12 determines that encryption of customer information  
 13 either in transit, over external networks or at rest  
 14 is infeasible, the financial institution may instead  
 15 secure such customer information using effective  
 16 alternative compensating controls reviewed and  
 17 approved by the qualified individual or CISO.  
 18 So, Rocio, I'd like to begin with you,  
 19 please. Could you please share with us your thoughts  
 20 about this requirement of encryption both in transit  
 21 or at rest.  
 22 MS. BAEZA: So, I'm a big fan of this  
 23 specification. So as a data privacy advocate, as a  
 24 provider of information security services, I welcome  
 25 the changes. I think that there is room for

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1 misinterpretation by an untrained professional that  
 2 might be tasked with implementing this.  
 3 So, take, for example, if I were to ask a  
 4 CEO or a chief compliance officer, does your company  
 5 encrypt consumer data, they'll probably say yes. If  
 6 you ask that question to a system administrator or a  
 7 software developer, they're going to be asking -- they  
 8 should ask -- what environment are you referring to,  
 9 what systems are we talking about, and then are we  
 10 talking about data in transit or data at rest. Data  
 11 in transit, the encryption of data in transit has been  
 12 standard. There's no -- there's no pushback with  
 13 that.  
 14 The pushback that I tend to see from service  
 15 providers and partners is when we're talking about  
 16 encrypting data at rest. And I think that the  
 17 specificity is important so that whenever we're having  
 18 conversations about encryption, regardless of what our  
 19 technical background is and what our idea is around  
 20 encryption -- the encryption of data that we can't  
 21 see, I think we're going to get to a path where  
 22 there's more consistent application and understanding  
 23 of the requirements, and that's what will ultimately  
 24 lead to comprehensive application of IT security  
 25 controls in the environment.

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1 In the online payday lending space, so we  
 2 have a number of players, right, a number of systems.  
 3 And the question around encryption, it really applies  
 4 to every single path that you can think of where a  
 5 system is talking to another system, where data is  
 6 going back and forth from one vendor to another or  
 7 where data is going back and forth from a human to a  
 8 human.  
 9 So the only way that this proposed change  
 10 can be effective is if there's particular language  
 11 to make sure that we're expecting this to be  
 12 comprehensive; not just the critical application that  
 13 the organization relies on but the whole data  
 14 processing environment.  
 15 MS. MCCARRON: Thank you.  
 16 James, I'd also like to ask for your view on  
 17 the encryption requirement.  
 18 MR. CRIFASI: So I think specificity is  
 19 really the key there of what data are we talking  
 20 about, where, and how you want to encrypt it. So as  
 21 an example, there was a study that said three-quarters  
 22 of all phishing sites operate under SSL. So that's  
 23 encryption in motion.  
 24 And in doing that, they all hide from all  
 25 the great security stuff that we like to give people

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1 and that everyone thinks is good, basic cyber hygiene.  
 2 So it's a good example of how encryption in motion can  
 3 be completely misused.  
 4 We have a small insurance company we're  
 5 working with right now who their service provider  
 6 misunderstood that and they're now trying to over-  
 7 encrypt, I would say, the communication between their  
 8 servers and their computers that are all sitting right  
 9 next to each other. As a result of what they're  
 10 trying to do, though, it is now invalidating three or  
 11 four different levels of security that used to be able  
 12 to see and do something about the data, and now it  
 13 can't because it's hidden in this encryption tunnel.  
 14 And so for us, while we like the idea of  
 15 encryption at rest and in motion, it really has to be  
 16 well defined and it needs to be defined to the point  
 17 where, you know, folks like us don't have to explain  
 18 to people what does it mean, how does it work and what  
 19 does it look like. It needs to be very, very detail-  
 20 oriented in terms of we're talking about information  
 21 that's perhaps not in a secure environment, or to  
 22 Rocio's point, the system interaction is really a key  
 23 place. But we have to keep in mind, the more we  
 24 encrypt, the more we rob visibility and purview from  
 25 our security systems that might actually reach out and

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1 take action.  
 2 So at one point we're encrypting it, but at  
 3 the other point we're potentially stopping our DLP  
 4 from blocking that from getting out of the  
 5 environment. And I think that's a key point of  
 6 contention there between a desire for encryption and a  
 7 desire to actually have proactive security that's able  
 8 to do something useful. So specificity, to me, is  
 9 really required in that rule before it should be  
 10 really applicable.  
 11 MS. MCCARRON: Okay, thank you. So we have  
 12 about 10 minutes left. We have a question that has  
 13 come in from the audience which I'd like to pose, and  
 14 then whoever would like to answer this just please  
 15 raise your hand and go for it. And then after that, I  
 16 would like to have some wrap-up thoughts from all five  
 17 of you.  
 18 Okay. So the question from the audience is  
 19 small- to medium-sized entities have diverse  
 20 management structures and often take a team approach  
 21 to security management. Are there alternatives to  
 22 naming a single responsible individual and/or annual  
 23 reporting to the Board that would help establish clear  
 24 lines of responsibility and accountability among the  
 25 team required to lead security?

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1 So they're looking for your thoughts. And,  
 2 Kiersten, I'd like to have your thoughts, please.  
 3 What are the alternatives to a single responsible  
 4 individual and/or reporting to the board that would  
 5 achieve the goals of responsibility and  
 6 accountability.  
 7 MS. TODT: I think it's a great question  
 8 because it really gets at this issue of, in a perfect  
 9 world it would be wonderful to be able to identify a  
 10 CISO for every small business to say all of the  
 11 responsibility for cybersecurity rests within this  
 12 individual and everyone can go about and do what  
 13 they've been doing. But that's not really the reality  
 14 that we live in anymore. The idea, again, that every  
 15 employee has this responsibility. And I think a team  
 16 approach particularly for smaller businesses is what  
 17 is more viable.  
 18 Again, we don't want to create rules and  
 19 regulations that do not respect or recognize the  
 20 challenges of these small business environments. So  
 21 we're not actually helping the small businesses but  
 22 we're challenging them to do more with limited  
 23 resources.  
 24 And so by creating a team, it's where you  
 25 have to then identify and articulate specific

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1 responsibilities to individuals that come together.  
 2 And I think one of the key advantages to this type of  
 3 approach is it does create that culture of everybody  
 4 has a role within the organization, whether it's  
 5 toward the Safeguard Rules, but I would argue it  
 6 should just be for the basics in cybersecurity first.  
 7 Then you are creating that culture because you have  
 8 the responsibilities distributed across the  
 9 organization.  
 10 And as far as the accounting requirements,  
 11 you always want to make sure that you are exchanging  
 12 with your leadership, whomever that is. And  
 13 oftentimes in small businesses we see that a leader  
 14 can have multiple responsibilities. But the idea here  
 15 is to have that exchange of information so that there  
 16 is an evolving sense and growth toward a more cyber-  
 17 secure environment.  
 18 MS. MCCARRON: Okay, thank you.  
 19 And then one last question from the  
 20 audience. How does it, or should it, change the  
 21 analysis of the cost and benefits of a vendor  
 22 relationship if the financial institution must address  
 23 multiple legal and regulatory regimes?  
 24 Rocio?  
 25 MS. BAEZA: The way we do that is by

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1 harmonizing. And it's going to take work and it's  
 2 going to take resources and manpower. So many  
 3 fintechs have this challenge. They operate in  
 4 different states. They are subject to state-specific  
 5 law that are a lot industry-specific expectations  
 6 around security. For example, PCI DSS.  
 7 MS. MCCARRON: Mm-hmm.  
 8 MS. BAEZA: The only way that you can be  
 9 comprehensive in meeting your security requirements  
 10 across the board is through a process of harmonizing  
 11 what all the requirements are. And that takes work  
 12 and effort and resources. And it's an important job  
 13 that has to be carried out. That's the only way that  
 14 you can do that.  
 15 MS. MCCARRON: Okay, thank you.  
 16 So now I'd like to go to the final question.  
 17 I'd like to do a speed round of your thoughts on the  
 18 proposed amendments to the Safeguards Rule from the  
 19 perspective of a small business.  
 20 So let me start with James. James, could  
 21 you tell us what -- from the perspective of someone  
 22 who works with small businesses, what do you like  
 23 about the proposed amendments and what do you think  
 24 you don't like or that have too many costs? Thank  
 25 you.

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1 MR. CRIFASI: So, obviously multifactor  
 2 authentication. We like the fact that it's in there  
 3 and it's universal. We strongly believe in that. I  
 4 think from the point of view of things we don't like  
 5 about it, the written requirements, what we don't like  
 6 about that isn't that there are written requirements.  
 7 What we don't like about it is that it robs people of  
 8 the ability to interact.  
 9 And so as an example when we talk about  
 10 having one individual that's responsible, it kind of  
 11 implies that everybody else is no longer responsible  
 12 because you found one person who is now the scapegoat.  
 13 And so what we find in the small businesses if we go  
 14 in and we read someone's board report and it's 40  
 15 pages of gobbledegook about how they compare against  
 16 all of these different things that they need to do for  
 17 different states and we look it, it's very bloodless.  
 18 It's very political. There's no material in there to  
 19 actually effect change.  
 20 What we find works a lot better is to have  
 21 that be an interactive discussion and actually open it  
 22 to be able to talk about what are people doing well,  
 23 what are they doing poorly, and how can we change  
 24 that. And I think that brings them more into a  
 25 culture of effecting change from a security point of

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1 view. It gets everybody enlisted with it. And so  
 2 from the safeguards statement, you know, I wish it was  
 3 a little bit more oriented in that manner.  
 4 MS. MCCARRON: Okay, thank you.  
 5 Brian, may I turn to you next for your --  
 6 speed round of your thoughts?  
 7 MR. MCMANAMON: Sure. Yeah, and I'm going  
 8 to talk more about, you know, what I like versus what  
 9 I dislike. I think the proposed changes are the  
 10 minimum necessary to have an effective security  
 11 program in place. And really starting with the annual  
 12 risk assessment, I think that's a great place to start  
 13 for small/medium-sized business, really understand the  
 14 risks. And we've heard about that in these panels  
 15 around people, process and technology and really  
 16 understanding what that threat environment looks like  
 17 for that particular business.  
 18 We need to get beyond the traditional  
 19 checklists that are out there and really create a  
 20 flexible and adaptive security program. And the  
 21 reason for that is because the hackers aren't  
 22 sleeping. Right? They're constantly changing their  
 23 methods and businesses, and their security controls  
 24 need to change with those hackers' methods.  
 25 More specifically, I'm in agreement with the

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1 implementation of controls around continuous  
 2 monitoring and penetration testing. I think being  
 3 proactive to those threats is critical. And then  
 4 moving towards more of a maturity model is important  
 5 for SMBs. That's what we're seeing from some of the  
 6 scams that are out there from PCI to HITRUST, the  
 7 upcoming Department of Defense cybersecurity maturity  
 8 model. So really starting with that basic security  
 9 strategy and then continuing to mature that over time  
 10 is what will make SMBs more secure.  
 11 MS. MCCARRON: Thank you, Brian.  
 12 Rocio, I'd like to turn to you next for your  
 13 concluding thoughts on the proposed amendment.  
 14 MS. BAEZA: Absolutely. So there's -- my  
 15 favorite part is the requirement for a risk  
 16 assessment. So the expectation that it's written and  
 17 that it serves as a foundation for the information  
 18 security program.  
 19 Two things that I don't like, I'm not a big  
 20 fan of, one, I think it's missing -- the proposed  
 21 changes are missing foundational elements that need  
 22 to be in place in order to be able to build an  
 23 effective information security program.  
 24 And I think James and Kiersten alluded to  
 25 this with the importance of having basics and being

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1 specific of what data we're talking about and where.  
 2 So the basics that I'm referring to are expectations  
 3 around having data asset inventory, a data inventory,  
 4 a third-party vendor inventory, a data flow diagram.  
 5 Like, we have to be very specific with what we're  
 6 talking about. What data do we hold, where is it  
 7 coming, where is it going? And I would love to see  
 8 that be integrated either as part of the risk  
 9 assessment requirements or as a foundational step that  
 10 is -- that the risk assessment points to.  
 11 The other item that I'm not a fan of is the  
 12 weak position that small businesses have as it relates  
 13 to engaging service providers. So fintechs are able  
 14 to move very fast because they're able to partner up  
 15 with different third-party vendors to fulfill very  
 16 specific options. But these third-party vendors have  
 17 very canned terms of use. We're seeing less and less  
 18 negotiations of agreements and more of this is our  
 19 canned agreement, take it or leave it.  
 20 And, like, if you look at the liability  
 21 limitations sections, it's right there. They're  
 22 wanting not to accept responsibility, share  
 23 responsibility for any security events that happen in  
 24 the environment that they're making available. And,  
 25 to me, that's a concern.

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1 MS. MCCARRON: Thank you very much.  
 2 Kiersten, may I have your concluding  
 3 thoughts?  
 4 MS. TODT: Thank you. So I think some of  
 5 the key points that are positive are focusing on  
 6 things like multifactor authentication. I believe  
 7 that right now multifactor authentication should be a  
 8 default. And my hope for something like the Safeguard  
 9 Rule that mandates multifactor is that it now starts  
 10 to encourage those companies that can offer it and  
 11 make it a default but don't and leave it up to the  
 12 user to choose to do MFA that you start to see  
 13 incentives in the actual workspace and across industry  
 14 for doing so. And I think that could be a very  
 15 positive output from something like this.  
 16 The debate and the discussion we had on MFA  
 17 versus encryption, I think, highlights why those two  
 18 are not the same. And so mandating both of those is a  
 19 very different -- it's apples and oranges. And so I  
 20 don't need to repeat the conversation around  
 21 encryption, but I think it is not -- they can't really  
 22 be bucketed together and so we really have to look  
 23 more closely at what we're asking small businesses to  
 24 do.  
 25 The other piece is that a lot of what we've

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1 talked about requires an outsourcing. And when we do  
 2 that, then we have to really be able to help small  
 3 businesses monitor and work with third-party vendors  
 4 and outsourcing requirements to know what they should  
 5 be looking for and what's required of those third-  
 6 party -- those third-party vendors.  
 7 I mentioned earlier that 56 percent of our  
 8 organizations suffer breaches caused by third-party  
 9 vendors. So it's just enough to say, okay, if you  
 10 can't do it in-house, then you should outsource it.  
 11 We have to really provide that guidance and that  
 12 specificity.  
 13 Now, to what I don't like, I think this is  
 14 -- it's an interesting conversation that we've had  
 15 because I know there's been support for this is great  
 16 because it starts with a baseline set of requirements.  
 17 I would assert, however, that I think that baseline is  
 18 still very high for small businesses. I don't think  
 19 it's actually at the ground level. I think that we're  
 20 assuming that small businesses have a lot more  
 21 resources than they have. And my concern there is  
 22 that we then get into a checklist, and then you start  
 23 to see noncompliance and you start to see costs for  
 24 small businesses being driven very high in order to  
 25 comply to all these requirements. And that affects

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1 their competition.  
 2 And if we ask small businesses to do too  
 3 many things, we run the risk of doing a lot of things  
 4 not great and not really doing the basics right. And  
 5 so I think going, again, to the drum that I've been  
 6 beating in all of this is we really have to focus on  
 7 the human behavior of the whole organization,  
 8 getting those basics integrated and ensuring that by  
 9 having a qualified individual that does not delegate  
 10 and distribute and then relegate all authority and  
 11 responsibility for cybersecurity.  
 12 We have to get out of the mindset that there  
 13 is an individual responsible for security within an  
 14 organization and get to that place while there might  
 15 be somebody who's responsible for overseeing it, every  
 16 individual within an organization has that  
 17 responsibility.  
 18 MS. MCCARRON: Thank you very much.  
 19 Lee, I would like to give you the last word.  
 20 Can we have your thoughts, please, on the proposed  
 21 amendment?  
 22 MR. WATERS: I like the fact that we are  
 23 addressing the security. But we need to also be  
 24 careful not to overregulate it. Now, the smaller  
 25 businesses, they can do a lot with the resources they

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1 have, but when you start piling on too much and they  
 2 have to start hiring outside businesses, third-party  
 3 vendors or hiring overpaid security experts to handle  
 4 something that's been regulated, it starts affecting  
 5 consumer prices; it starts affecting the small  
 6 business profit margins, and it's just not good for  
 7 anybody. So we just need to find a balance here.  
 8 MS. MCCARRON: Very good. Well, thank you.  
 9 It looks like we are out of time. I want to thank all  
 10 of you for our time this morning. And thank you for  
 11 sharing your perspectives and your expertise. We're  
 12 going to take a break now and we'll be back with Panel  
 13 3 in a moment.  
 14 (Whereupon, a recess was taken from 11:49  
 15 a.m. to 1:01 p.m.)  
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1 CONTINUOUS MONITORING, PENETRATION, AND VULNERABILITY  
 2 TESTING  
 3 MR. IGLESIAS: Good afternoon and welcome  
 4 back to the FTC's workshop on the GLB rule. My name  
 5 is Alex Iglesias and I'm an IT specialist at the FTC,  
 6 and I will be moderating this panel on continuous  
 7 monitoring, penetration testing and vulnerability  
 8 testing.  
 9 Joining me on this panel are Thomas Dugas,  
 10 who is the assistant vice president and chief  
 11 information security officer and an adjunct faculty  
 12 member at Duquesne University; Fredrick Lee, who goes  
 13 by Flee, who is the chief information security officer  
 14 at Gusto; Scott Wallace, who is a penetration tester  
 15 at the Department of Homeland Security; and Nicholas  
 16 Weaver, who is a researcher at the International  
 17 Computer Science Institute and a lecturer in computer  
 18 science at UC Berkeley.  
 19 This panel is going to discuss the proposed  
 20 changes to the GLB Safeguards Rule related to  
 21 continuous monitoring, vulnerability testing,  
 22 penetration testing.  
 23 As David discussed earlier, the proposed  
 24 rule would require information systems to include  
 25 audit trails, to detect and respond to security

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1 events. Second, the proposed rule would require  
 2 policies and procedures to monitor the activities of  
 3 authorized users and to detect unauthorized access,  
 4 use of or tampering with customer information.  
 5 Lastly, the proposed rule are continuous monitoring or  
 6 periodic penetration testing and vulnerability  
 7 assessment, whereas penetration testing would be  
 8 conducted annually and vulnerability testing would be  
 9 biannual.  
 10 I would note if you have any questions  
 11 during this panel, please feel free to email them to  
 12 [safeguardsworkshop2020@FTC.gov](mailto:safeguardsworkshop2020@FTC.gov).  
 13 To get us started, I'll ask Tom, what is  
 14 continuous monitoring and can businesses and other  
 15 institutions big and small reasonably be expected to  
 16 implement continuous monitoring.  
 17 MR. DUGAS: Thanks, Alex. And thanks for  
 18 having me as part of the workshop and on the panel.  
 19 So continuous monitoring is the ability to see and  
 20 react to activity within your computing environment  
 21 based on logging and log aggregation. The analysis of  
 22 those logs provides us the ability to take a look at  
 23 what we need to do to react or protect our computing  
 24 environments to reduce risks related to incidents and  
 25 breaches.

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1 That continuous monitoring could be done  
 2 with systems and services or polls, or it can be done  
 3 manually. While these services are also very  
 4 valuable, part of the challenge is that it can also be  
 5 very costly. For example, you know, one of the  
 6 sessions this morning talked a little bit about the  
 7 fact that for, you know, a 3,000-plus endpoint  
 8 environment, it would be about \$50,000 a month for a  
 9 university like Duquesne, for example, which is kind  
 10 of a small/mid-sized university. It would be about  
 11 \$600,000 a year in expense in that consideration.  
 12 Universities are so expensive in these  
 13 considerations because we have a lot of data.  
 14 Duquesne itself has about 9,000 students. And we act  
 15 as both an ISP to those students who live and work  
 16 here on campus and also basically serve our  
 17 institution in the businesses that we actually run.  
 18 We almost have, you know, 1,800 employees as well that  
 19 are working to support our institution and our  
 20 mission.  
 21 So being able to continuously monitor that  
 22 entire network can cost hundreds and hundreds of  
 23 thousands of dollars. And we need to make sure  
 24 because those are based on ingestion costs in a lot of  
 25 cases.

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1 Just as a quick analysis based on retail  
 2 costs for a tool like Splunk, for example, we have  
 3 about 200-gig-plus in ingestion a day. And that would  
 4 probably cost us about, you know, \$600 per gigabyte  
 5 annually. So that can be quite expensive when you get  
 6 to that consideration when you look at something like  
 7 that. It would be about \$120,000-plus for a  
 8 university like ours.  
 9 So we need to continue to keep an eye on  
 10 those costs and certainly need to make sure that we  
 11 have the dedicated security staff to manage them. So  
 12 it's certainly important. I think it's very valuable,  
 13 but it's also something we need to keep an eye on to  
 14 make affordable as well.  
 15 MR. IGLESIAS: Great. Thanks, Tom.  
 16 Nick, do you have anything to add on the  
 17 costs, benefits or implementation of continuous  
 18 monitoring?  
 19 MR. WEAVER: Yes. So when things go wrong,  
 20 you want to know what happened. And the whole point  
 21 of continuous monitoring of systems and logging all  
 22 that information is so that when something does go  
 23 wrong, you can ask what happened; what got  
 24 compromised; what did not. And there are -- there's  
 25 an unfortunate tradeoff here. There's a lot of tools

125	<p>1 that are actually really cheap for this.</p> <p>2 So for network monitoring, there's the Zeek</p> <p>3 network monitor. For monitoring end hosts, per se,</p> <p>4 you've got Syslog, Linux and Sysmon on Windows, and</p> <p>5 these both support remote log-in. You've got Nessus</p> <p>6 to inventory your network and know what's on it.</p> <p>7 But to use those tools, you need experienced</p> <p>8 personnel. So you've got basically a tradeoff here.</p> <p>9 If you're outsourcing the work, you're spending a</p> <p>10 fortune. If you're insourcing the work, you aren't</p> <p>11 necessarily spending a fortune because if you're the</p> <p>12 system administrator, you want this information</p> <p>13 anyway. You want to know what's on your network. You</p> <p>14 want to be able to check that everything is working</p> <p>15 right. And the logging facilities are just as useful</p> <p>16 for debugging incident response. But there's a</p> <p>17 general shortage of good personnel in this space and</p> <p>18 they aren't cheap.</p> <p>19 MR. IGLESIAS: Nick, do you think those are</p> <p>20 accessible to smaller businesses and smaller</p> <p>21 institutions?</p> <p>22 MR. WEAVER: It depends. So if you're a</p> <p>23 small institution but have one or two good experts,</p> <p>24 you're in good shape. So like at ICSI, we're a small</p> <p>25 outfit but we have a really good system administration</p>	127	<p>1 staff, either outsource or in-house, or even in some</p> <p>2 cases automated tools act like an actual attacker.</p> <p>3 Obviously these are meant to be somewhat benign</p> <p>4 attacks. But the goal is to actually really see how</p> <p>5 severe a vulnerability could be if exploited, to help</p> <p>6 give a group an understanding about, you know, what</p> <p>7 are the issues to fix and also what are the priorities</p> <p>8 of the issues.</p> <p>9 So, you know, when you do a pen test, you</p> <p>10 also are not only classifying the potential exploits</p> <p>11 or potential defects there but essentially also how</p> <p>12 severe those things are.</p> <p>13 With regards to, like, how and where that</p> <p>14 actually fits into the ecosystem, it really is meant</p> <p>15 to be almost like a sanity check of what the system</p> <p>16 looks like from an attacker's perspective. Something</p> <p>17 to actually keep in mind, though, is that a pen test</p> <p>18 is not, like, completely comprehensive. And that's</p> <p>19 actually one of the weaknesses of a penetration test,</p> <p>20 is kind of like this notion of coverage. How many</p> <p>21 different parts of the system were you able to test;</p> <p>22 how effective were your tests?</p> <p>23 So just because a pen test doesn't have a</p> <p>24 lot of issues, per se, does not necessarily mean that</p> <p>25 a system is secure but it does give some confidence of</p>
126	<p>1 team of two and a network security incident response</p> <p>2 team that consists of multiple researchers who</p> <p>3 specialize in this.</p> <p>4 But that's -- we're able to do that because</p> <p>5 we have the personnel already in place. And so it's</p> <p>6 how good and creative and motivated is your system</p> <p>7 administration staff.</p> <p>8 MR. IGLESIAS: Great. Thanks, Nick. Moving</p> <p>9 on to another topic, what is penetration testing and</p> <p>10 what role does that have in an information security</p> <p>11 program? How often should an organization conduct</p> <p>12 these tests and what factors should go into</p> <p>13 determining the frequency of these tests? And I would</p> <p>14 ask that to Flee.</p> <p>15 MR. LEE: Yeah. So penetration testing is</p> <p>16 effectively just attack simulation, with the goal</p> <p>17 being to try to actually just go across the entire</p> <p>18 gamut of potential vulnerabilities that a</p> <p>19 system/infrastructure may contain, and then actively</p> <p>20 try to, you know, truly exploit those systems.</p> <p>21 So, you know, we're going to talk a little</p> <p>22 bit more later about vulnerability scanning, but think</p> <p>23 about, like, pen testing as being not only finding</p> <p>24 vulnerabilities but trying to determine which</p> <p>25 vulnerabilities are true by essentially having your</p>	128	<p>1 saying, like, hey, at least these types of issues were</p> <p>2 tested for; we did not find these issues in these</p> <p>3 particular areas, but it doesn't mean that something</p> <p>4 is explicitly secure or insecure. The other thing to</p> <p>5 actually take into account is that a pen test is</p> <p>6 literally just an assessment at a specific point in</p> <p>7 time. So just because a pen test was actually done</p> <p>8 six months ago does not mean, and most likely is not</p> <p>9 meaning, that the system that was tested is in the</p> <p>10 same condition. More than likely, software has been</p> <p>11 updated; patches were applied; the network itself may</p> <p>12 have changed.</p> <p>13 So that's actually part of the reason to</p> <p>14 think about, you know, how you do pen testing to</p> <p>15 really be a check against significant changes that</p> <p>16 actually were made to a system. Ideally you're doing</p> <p>17 a penetration test at least annually. However, a lot</p> <p>18 of people would recommend that you also do a</p> <p>19 penetration test with any kind of significant change</p> <p>20 to the system. So if you've actually added new</p> <p>21 features to the software that you're building, if</p> <p>22 you've changed the network topology, et cetera, you</p> <p>23 probably want to do a penetration test again.</p> <p>24 But, once again, that really is part of a</p> <p>25 broader holistic security program. Penetration tests</p>

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1 in and of themselves are not sufficient. It's meant  
 2 to actually just really be yet another tool to help  
 3 identify security weaknesses in a proactive manner so  
 4 that you're able to actually fix things prior to an  
 5 attacker exploiting them.  
 6 MR. IGLESIAS: Thanks, Flee. And what would  
 7 those typically cost a business and what is the range  
 8 for that?  
 9 MR. LEE: And so this is where it gets  
 10 really interesting. For the penetration test -- and I  
 11 love that Nick kind of already got onto this. You're  
 12 always paying some kind of cost when it comes to  
 13 resourcing, right? Obviously you can have in-house  
 14 talent that can actually do that penetration test.  
 15 Security engineers in general are not cheap. So, you  
 16 know, there's no such thing as a security engineer  
 17 that's making less than six figures. And obviously  
 18 this is going to generally be at the higher end of  
 19 that. So in-house is going to be expensive for you.  
 20 Going externally definitely is an option.  
 21 That kind of goes across the gamut. But to some  
 22 extent you are kind of getting what you pay for. So  
 23 it's not uncommon for kind of like an 80-hour  
 24 penetration test to start at at least \$40K, but that  
 25 can actually quickly go up to six figures depending on

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1 the complexity of the system, the specific vendor that  
 2 you pick, and also how much you want to have tested.  
 3 So if you want to have somebody doing  
 4 testing on something that is actually fairly nuanced,  
 5 so, for example, you built an embedded system of some  
 6 sorts or, you know, kind of like an IOT-type device,  
 7 that expertise is way more expensive than somebody  
 8 just doing a penetration test for a "basic website."  
 9 So that definitely is one of those things to take into  
 10 consideration.  
 11 There are some new novel type alternatives.  
 12 Because when you think of a penetration test, if you  
 13 think of it from the lens of what you really want the  
 14 outcome to be, the outcome should be trying to find  
 15 vulnerabilities or security weaknesses in the system  
 16 proactively. And so there are other mechanisms like  
 17 things such as bug bounties, which can make that cost  
 18 a little bit less. But it's also one of those areas  
 19 where as an industry we haven't really solidified on  
 20 that being adopted. And particularly around things  
 21 like regulations, to get regulations to start  
 22 accepting bug bounty reports as being at least  
 23 comparable to a "classic penetration test."  
 24 MR. IGLESIAS: Thanks, Flee.  
 25 Nick, did you want to respond to that?

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1 MR. WEAVER: I just want to add one other  
 2 real valuable thing from the penetration test, is it  
 3 basically gives you a dry run on all your response.  
 4 So whether or not the pen testers succeed, you should  
 5 go back and see in your logging infrastructure, your  
 6 monitoring infrastructure, did you record this. Did  
 7 you catch this either before or even after you find  
 8 out.  
 9 MR. IGLESIAS: Great.  
 10 Scott, did you have anything to add, and  
 11 specifically are there any limitations with  
 12 penetration testing at large?  
 13 MR. WALLACE: Yeah, so sure, I'll just kind  
 14 of talk about what it's like on a typical pen test for  
 15 us. So we get all of the IP addresses that we're  
 16 allowed to operate in on both the external and the  
 17 internal network. We also get a list of emails for a  
 18 phishing campaign. And so the pen tests that we  
 19 normally do are one week externally and then one week  
 20 internally.  
 21 So on the external week, the first thing we  
 22 do on Monday is we prepare for the phishing campaign.  
 23 We have a template and a payload that we run by the  
 24 point of contact. And then once that's all been  
 25 approved, we send that out to the email list. And we

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1 generally get beacons off of that. We have a  
 2 surprisingly high click rate. Other things that we do  
 3 on the external network are do host discovery and  
 4 vulnerability scans on the hosts that are open and  
 5 have ports available.  
 6 There's generally not much that is directly  
 7 exploitable on the external network, although there  
 8 are some crazy things that we've seen. So, like, my  
 9 favorite one was there was an entity that had default  
 10 credentials on the external network. And so we just  
 11 looked up the default credentials, logged on to the  
 12 server and there was all of this crypto mining  
 13 software that was running on the server and calling  
 14 back to Europe. So he was using them as a server  
 15 farm, whoever was doing that over in Europe.  
 16 But generally we'll get a couple beacons off  
 17 of the phishing campaign, and from there it gets more  
 18 interesting because people are a little more lax on  
 19 their internal network than their external network.  
 20 So the kind of joke is that in cybersecurity, that  
 21 it's hard and crunchy on the outside and soft and  
 22 chewy on the inside.  
 23 And so we'll do things like -- Responder is  
 24 a popular technique to use on the internal network  
 25 whereby there's all sorts of folks requesting services

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1 on the internal network. So, for example, if somebody  
2 is searching for a printer, we'll just say, hey, yeah,  
3 on that printer, here's a handshake, talk to me. And  
4 then so we can possibly get some hashes from that.  
5 And weak passwords is definitely one of the most  
6 common vulnerabilities that we find on the internal  
7 network. So we could get hashes from Responder, we  
8 could get hashes from a technique called  
9 Kerberoasting. On a traditional Microsoft network,  
10 you have a ticket graining system called Kerberos,  
11 which is authentication on the internal network, and  
12 you can request hashes from Kerberos. And so that is  
13 another way that you can possibly crack some hashes.

14 And then patching is another big  
15 vulnerability that people don't keep up with as well  
16 as they should. And another one is network  
17 segmentation. And this has especially been important  
18 as we've been working throughout the 2020 elections  
19 because states and counties interact with each other  
20 for the voting process.

21 And so when it comes to network segmentation  
22 at a county level, for example, you could have the  
23 sheriff and the emergency medical services and the  
24 board of elections and the, you know, garbage all on  
25 the same county network but not properly segmented.

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1 So, in other words, you could exploit the landfill's  
2 network or the sheriff's network and be able to find  
3 your way to the elections side of the county. And so,  
4 yeah, Nick, I see his comment here. But Mimikatz is  
5 very popular. So when we're spreading around a  
6 Microsoft network, there's a tool called Mimikatz that  
7 actually allows you to pull credentials out of memory  
8 if that person is logged on to the box.

9 So traditionally what we'll do once we get  
10 that initial beacon from the phishing, there's a  
11 really, really effective tool called BloodHound. And  
12 the guys that wrote it are very smart. We used to  
13 work with them. And basically what it does is it maps  
14 out active directory in the Microsoft domain. And so  
15 you can see where the domain admins are logged in to.

16 And what you want to do is navigate to those  
17 boxes that they're logged in to so that you can scrape  
18 the DA's creds out of memory and then you control the  
19 network.

20 So that's sort of a summary of kind of what  
21 it's like in the real world on a test. We generally  
22 use some form of phishing to get beacons and then  
23 running BloodHound to navigate to where the admins  
24 are. Responder is another one. Kerberoasting, like I  
25 said, to get more hashing from the ticket graining

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1 system, and then patches. Some of these like  
2 EternalBlue and some of these things that came out  
3 even years ago people have still not patched. So  
4 that's traditionally what you'll see on a pen test,  
5 especially on the internal network.

6 MR. IGLESIAS: Flee, did you have something  
7 to add?

8 MR. LEE: Yeah. I actually wanted to  
9 piggyback on several of Scott's comments because  
10 actually they were great. And, also, Scott's comments  
11 give some insight into some of the challenges of these  
12 kind of rules, and pen testing in particular, how it  
13 will impact a small/medium-sized business or  
14 organization.

15 Everything Scott said was true. But I can  
16 imagine that probably half the people actually  
17 watching this audience didn't understand a word that  
18 he said. And not because the people in the audience  
19 aren't, you know, intelligent, but because it's  
20 actually really technically, you know, complex.

21 And on the side of a business or somebody  
22 else, a small organization needing to have a  
23 penetration test done, one of the important things is  
24 actually understanding the scoping, this concept of  
25 what should we test but also how the test should be

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1 conducted.

2 So, like, Scott spoke a lot about, you know,  
3 what it's like actually doing a bunch of pen tests, in  
4 particular like, hey, should it be a network  
5 penetration test; should it be a penetration test of  
6 just, say, like a web application. But even moreso,  
7 he was mentioning tests that were for things that are  
8 actually, like, in a Windows environment.

9 So if you are a small business or a small  
10 organization that doesn't have internal security  
11 experts or really, really intelligent maybe network  
12 engineers, you may be at a disadvantage for actually  
13 figuring out how to actually properly test. So you  
14 can actually have a pen test done, but the true value  
15 that we're driving for here is incentivizing and  
16 encouraging businesses to proactively find security  
17 defects and get those defects fixed.

18 It also requires that they have either some  
19 in-house knowledge or some assistance in actually  
20 trying to figure out how to properly test their  
21 business. So a traditional like OWASP top ten or like  
22 a web-type penetration test, if I'm a manufacturer of,  
23 you know, like, embedded devices, that test isn't  
24 relevant to me. But if I don't have the necessary in-  
25 house expertise, I wouldn't know which test I'm

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1 buying, if I'm buying the right services or not.  
 2 And that actually is one of the things that  
 3 we have to worry about when we consider these kinds of  
 4 rules and regulations and how they're going to impact  
 5 people that may not have a Scott on their team. So if  
 6 you have a Scott in your organization, you're fine.  
 7 If you don't have a Scott in your organization, you're  
 8 going to be at a disadvantage. And we need to make  
 9 sure that whatever rules and guidance we push down  
 10 still allow for people to actually figure out and  
 11 actually learn that process as it goes along.  
 12 MR. IGLESIAS: Thanks, Flee.  
 13 Tom, did you want to add anything on this  
 14 topic?  
 15 MR. DUGAS: And, Flee, I think that's  
 16 spot on. One of the challenges that I think is really  
 17 important to make sure we cover in part of the  
 18 Safeguards Rule change is the fact that the scope of  
 19 the rules must really fit the information that's  
 20 covered.  
 21 What are we defining as customer  
 22 information; how does it apply? I mean, the perfect  
 23 example is what we have the -- you know, why we are  
 24 part of the FTC Safeguards Rule in the first place for  
 25 higher education is because we handle financial aid

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1 data. Financial aid data is really just a very small  
 2 subset of what we do here at the institution. But it  
 3 obviously, you know, could have major implications for  
 4 us in terms of what we need to do to, you know, fund  
 5 and staff a cybersecurity program.  
 6 So we need to make sure that as we're  
 7 thinking about what we need to cover in terms of the  
 8 rule, we need to be very explicit about what that GLBA  
 9 Safeguards Rule defines as customer information and  
 10 how it fits in institution because arguably, when  
 11 we're doing a pen test, if I had called Scott and  
 12 said, Scott, I want you to do a pen test but I only  
 13 need you to pen test that financial aid data, but the  
 14 reality of it is that, you know, he could easily  
 15 maybe get the financial aid data as, you know, Flee  
 16 was talking about from somewhere else, you know, or I  
 17 think Scott was talking about by going in a different  
 18 way, from a different subsystem. Maybe it's not my  
 19 financial aid system; maybe it's my admission system.  
 20 Maybe it's something else that actually would provide  
 21 that beacon that allows them to look in and see what's  
 22 there.  
 23 And so those kind of considerations are very  
 24 important as we look at this information to make sure  
 25 we're counting for it correctly.

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1 MR. IGLESIAS: Great. Thanks, Tom.  
 2 Moving along to vulnerability testing, how  
 3 often should an organization conduct vulnerability  
 4 testing and what factors should they determine -- what  
 5 factors should they consider in determining the  
 6 frequency? Should testing be done, performed when  
 7 there's been a change in the system or an intrusion  
 8 attempt? Can it be automated and what does it cost?  
 9 And I would call to Flee to answer.  
 10 MR. LEE: Yes. So, you know, the TLDR here  
 11 is that at a super, super high level, you can just  
 12 think about vulnerability testing and vulnerability  
 13 scanning as trying to just do a really, really broad  
 14 sweep of the entire ecosystem and identifying things  
 15 that could, under certain circumstances, reduce the  
 16 security controls. Right? So making something  
 17 weaker.  
 18 Oftentimes when we think about this in  
 19 practice, what does it look like? It's scanning your  
 20 environment for the software that's installed and  
 21 comparing and checking to see if that software has any  
 22 known published security vulnerabilities.  
 23 This is often done via automated means. In  
 24 fact, I don't know of anybody that currently does  
 25 vulnerability scanning manually anymore. It really is

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1 now at a point where we can actually automate the  
 2 majority of it. And that automation can be  
 3 extraordinarily cheap because there's actually a lot  
 4 of free tools that actually can help with that. But  
 5 there's also a lot of commercial tools out there.  
 6 Some of those differences could be the  
 7 frequency with which they update some of the "rules/  
 8 signatures," the things that they actually look for in  
 9 the environment, all the way to the ease of actually  
 10 using the platform. So, you know, like a tool like  
 11 Qualys, et cetera, is actually highly polished, made  
 12 to make it really, really easy for somebody that can  
 13 utilize it. There's also open source tools such as  
 14 OpenVAS that kind of, you know, puts the -- you know,  
 15 essentially the operational burden onto the  
 16 organizations that's utilizing it.  
 17 But because it's so cheap and because it is  
 18 automated, most places should try to have  
 19 vulnerability scanning operating as frequently as  
 20 possible. So I know that the rules are actually  
 21 looking for, you know, these vulnerability scans to  
 22 occur probably like, I guess, twice a year. But I  
 23 would argue to say that it's actually one of those  
 24 things that is achievable more frequently.  
 25 Some of the things to actually watch out for

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1 is how vulnerability scans actually work. So because  
 2 they are doing some active things on the network,  
 3 there could be network performance issues even inside  
 4 of a, you know, test environment. There could be  
 5 issues where a vulnerability scan could potentially  
 6 impact those systems and the uptime itself. So that  
 7 actually is something to watch out for, and part of  
 8 the reason why it's good to actually have an expert on  
 9 staff that can actually detect those nuances and also  
 10 correct any errors that actually may be caused by the  
 11 vuln scanning.  
 12 One of the other issues also to worry about  
 13 with vulnerability scanning is, once again, kind of  
 14 like this nature of scope, like how much of your  
 15 ecosystem are you seeing and can you see. So in a  
 16 really, really well segregated network, doing a  
 17 vulnerability scan can be complex. You have to figure  
 18 out where do you actually deploy the tools so you can  
 19 actually see all of the network.  
 20 The other thing to actually also think about  
 21 is how do you actually aggregate all that data. And,  
 22 also, finally because of the nature of vulnerability  
 23 scans, you also have to worry about this concept of  
 24 false positives, meaning that you're going to find  
 25 things that will show up on a report that in your

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1 current environment or how things are actually  
 2 deployed are not actually truly exploitable or not  
 3 really, really security weaknesses.  
 4 So sometimes that will appear when maybe  
 5 you're running custom software, like a custom version  
 6 of a Linux package, for example, and that package  
 7 itself is not vulnerable but it has a signature that  
 8 looks similar to something else, which can introduce  
 9 some overhead with regards to that key work effort.  
 10 But to actually kind of, like, summarize, it  
 11 can be automated. And because it can be automated,  
 12 teams should actually drive towards doing those vuln  
 13 scans as frequently as possible, and definitely there  
 14 should be a vulnerability scan after any significant  
 15 network or application change, and always there should  
 16 be a vulnerability scan after a intrusion exercise,  
 17 whether it's a true, you know, intrusion attempt or  
 18 just an alert that was actually being investigated.  
 19 You're muted, Alex.  
 20 MR. IGLESIAS: Sorry about that. Thanks,  
 21 Flee. Tom, related to this topic, do you have  
 22 anything to add? That would be great. And then  
 23 specifically how much do these type of things  
 24 typically cost an organization?  
 25 MR. DUGAS: Well, certainly. I

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1 couldn't agree more with Flee. Vulnerabilities  
 2 account for the vast majority of cyber breaches in the  
 3 world today. In fact, you know, it's probably up  
 4 there, you know, with the number one reason why, you  
 5 know, information is being targeted, is because of a  
 6 breach. People have the automated scanners, they're  
 7 out there doing it maliciously. If you're not doing  
 8 it yourself, somebody else is doing it for you and you  
 9 just don't know if they're just doing it with ill  
 10 intent.  
 11 So we're trying to protect our critical  
 12 assets, our PII intellectual property, and I think  
 13 that the scanning of this needs to happen at -- you  
 14 know, we try to do it quarterly and at least annually.  
 15 But we realized that there's -- it's hard to manage  
 16 this because every time you find a vulnerability, you  
 17 have to assess whether that vulnerability really  
 18 impacts your university or not, or your organization.  
 19 Because in that case, it could have mitigating  
 20 controls that you've already implemented just to, you  
 21 know, keep that vulnerability at bay; to hide it from  
 22 the attacker.  
 23 And in some cases, you can actually keep  
 24 that, you know, system from being exploitable for a  
 25 period of time and keeping other mitigating controls,

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1 defense and debt, microsegmentation, firewalls, you  
 2 know, intrusion detection, intrusion prevention  
 3 system. There's a whole bunch of things that can  
 4 happen to allow that to occur.  
 5 But you've got to keep a mind that when you  
 6 find all these things, you know, whether it's a free  
 7 toll or an automated toll, or a per-fee toll, you get  
 8 this, you know, big, huge report with dozens and  
 9 dozens of pages of things that someone has to take  
 10 action off. You need to have expertise on staff to  
 11 understand what those vulnerabilities mean, how to  
 12 manage them, how to actually fix them, because that's  
 13 not something you can just do. I can run a toll tool,  
 14 you know, forever, but if the tool doesn't have  
 15 somebody behind it to analyze and understand whether  
 16 or not it impacts your organization and you have to do  
 17 something with it, and what you have to do, that's the  
 18 hard part.  
 19 And for -- we're kind of a mid-sized  
 20 organization. We're right on the cusp of where we  
 21 have that expertise. But I've got to tell you, of the  
 22 25 universities we partner with in Pennsylvania, we're  
 23 one of the minorities who have that level of expertise  
 24 that could run this continuously. Most of them can't.  
 25 They can't sustain that operation, even though it is a

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1 best practice, something I recommend. It's costly to  
 2 them from a staffing perspective, resource perspective  
 3 and the tool set, too.  
 4 MR. WEAVER: Agreed. One other reason,  
 5 though, why you want to do this and when you have  
 6 automation, you want to basically -- if you have your  
 7 system automated, you basically want it, like, every  
 8 day, is that a side consequence is this also gives you  
 9 an inventory. It tells you what is actually on your  
 10 network. So when the CTO's son logs in a gaming rig,  
 11 you actually find it.  
 12 MR. DUGAS: And, Nick, that's an important  
 13 characteristic. I mean, I don't know about Berkeley,  
 14 but I have 30,000 connected devices. I've got to  
 15 imagine you're a lot greater than that. So trying to  
 16 find that gaming system is a needle in a haystack  
 17 sometimes when you're thinking about unlimited amount  
 18 of resources in most IT organizations. We have  
 19 unlimited demand for limited resources.  
 20 And certainly we're going to talk, you know,  
 21 probably more about what this means for how  
 22 organizations are revolving around COVID. But, I  
 23 mean, we're even more struggling now with the way  
 24 we're managing our IT resources than we ever did  
 25 because we're trying to find a new way to help meet

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1 demand that's increasing, and at least in our case in  
 2 terms of IT needs. So, 30,000 devices, yeah, it's  
 3 easy to inventory it, but trying to, you know, manage  
 4 30,000 systems and all of the vulnerabilities that  
 5 come around with that is pretty intense.  
 6 MR. IGLESIAS: Thanks. Tom.  
 7 Scott, did you have anything you'd like to  
 8 add to this topic?  
 9 MR. WALLACE: Well, I can just kind of  
 10 piggyback off of it and jump into topic four if we're  
 11 ready and kind of describe some of the other services  
 12 that we have related to continuous monitoring and a  
 13 couple other services. Does that sounds good, Alex?  
 14 MR. IGLESIAS: Go for it, Scott.  
 15 MR. WALLACE: All right. So what I  
 16 described earlier was a risk and vulnerability  
 17 assessment that we do, which is sort of the full pen  
 18 test. If you want just a phishing campaign, we have  
 19 that as well, if you just want to do the phishing  
 20 test. We also have just the remote campaign.  
 21 Probably our most popular product, though,  
 22 is called cyber hygiene. And before I was on the pen  
 23 testing team, I was on the software development team  
 24 with a couple of smart and great guys that wrote this.  
 25 And basically what it is is it's a PDF that you get

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1 every Monday that details your entire external  
 2 network. And so it's a very simple sign-up process  
 3 and anyone can sign up. You just contact our mailbox  
 4 and give us your IP space. We go ahead and end map  
 5 that, figure out where the hosts and ports are, and  
 6 then run the vulnerability scan on that.  
 7 And the report we deliver every Monday  
 8 will kind of have an initial report card at the top.  
 9 And so you'll see mitigated vulnerabilities,  
 10 vulnerabilities that have remained and new  
 11 vulnerabilities that have popped up. They'll all be  
 12 color-coded based on their severity.  
 13 And then once you go deeper into the report,  
 14 you'll get details on the IP and what specific  
 15 vulnerability it is and additional detail. And so  
 16 that is called cyber hygiene. It's pretty effective  
 17 because the scanning is based on the severity of the  
 18 vulnerabilities. So when we pick up critical  
 19 vulnerabilities, the scanner comes back and rescans  
 20 that every 12 hours. And highs are every 24, mediums  
 21 are three days and lows are six days.  
 22 And so when you get it on Monday, your more  
 23 intense vulnerabilities have been scanned very  
 24 recently. And so when you get it on Monday, you have  
 25 a general picture. And like somebody said, you know,

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1 people doing things over the weekend -- we had a  
 2 customer who did some configuration changes on their  
 3 network one weekend and accidentally dumped the whole  
 4 internal network on the internet. And so there was a  
 5 massive spike in the report card that they saw when  
 6 they got it at 6:00 a.m. on Monday morning. So they  
 7 knew that they had made a mistake so they were able to  
 8 tackle it quickly. And that's totally, you know, free  
 9 at the point of signing up for anybody that would like  
 10 to sign up.  
 11 MR. IGLESIAS: And, Scott, what would an  
 12 organization need to sign up for that program?  
 13 MR. WALLACE: Well, there's not many  
 14 requirements. We just -- you know, we might have an  
 15 interaction with you and then all you need to do is  
 16 send -- you'll sign the legal contract and then you'll  
 17 give us your IPs. And then as soon as the next  
 18 Monday, you'll start getting your reports. It's  
 19 pretty straightforward and simple.  
 20 MR. IGLESIAS: And it would just scan the  
 21 external network or would it also scan the internal  
 22 network? How does that work?  
 23 MR. WALLACE: Yeah. It's just the external  
 24 network.  
 25 MR. IGLESIAS: Great. Thanks, Scott.

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1 Nick, are there any other products and  
 2 services available to institutions for continuous  
 3 monitoring and/or testing and what would these  
 4 normally cost?  
 5 MR. WEAVER: There's a lot. And the cost is  
 6 often a -- basically it's a product of how much you're  
 7 willing to spend and how much local expertise you  
 8 have. So for network monitoring, you have free high  
 9 quality network monitoring in the form of Zeek and  
 10 Snort and Suricata and all those that are really good  
 11 at logging everything that happens.  
 12 But if you're running them yourself, you've  
 13 got to have an expert on staff, or you can go with one  
 14 of the companies that's outsourcing the skill. And so  
 15 you don't need necessarily as much skill on staff, but  
 16 now you have a big dollar line item. In terms of  
 17 collecting on end host, it's the same thing. Sysmon  
 18 is free; Corelight costs a fortune. But Sysmon means  
 19 you have to have experts on staff who are able to set  
 20 up a server to ingest the logs, to analyze the logs.  
 21 Similarly for log analysis, you can spend a  
 22 fortune and go with Splunk, or you can go, these are  
 23 logs I'm rarely going to read and so it's  
 24 column/delimited text and you're using grep and  
 25 Python, or you might be splitting the difference and

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1 tossing it in the PostgreSQL database.  
 2 And so basically what it comes down to is  
 3 you have your questions. What's on the network?  
 4 What's happening on the network? What's happening on  
 5 the end host? And you basically then have to decide  
 6 where in the internal expertise versus external cost  
 7 tradeoff you are as an institution. And that  
 8 basically tells you what approach you have to take.  
 9 MR. IGLESIAS: Thanks, Nick.  
 10 Tom, did you have something to add?  
 11 MR. DUGAS: I did. And, you know, certainly  
 12 there are a lot of tools in this space and a lot of  
 13 services. In fact, this morning's sessions  
 14 demonstrated a number of them and what those costs  
 15 are. They're well documented. They can be tens of  
 16 thousands or hundreds of thousands of dollars  
 17 annually.  
 18 In order to get around that, at least in  
 19 higher education, we've done so by building  
 20 consortiums to try to stem the tide of the cost  
 21 because it's very hard to come up with that kind of  
 22 money when we know it directly ties back with, you  
 23 know, student tuition dollars, for example.  
 24 So the University of Texas at Austin, for  
 25 example, built a system called Dorkbot, which does a

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1 lot of the same things that the hygiene service at,  
 2 you know, the Department of Homeland Security does but  
 3 specifically for government and higher education to  
 4 actually analyze that external web content.  
 5 And then a number of Big Ten schools and  
 6 other research institutions built something called the  
 7 OmniSOC, which is a centralized security operations  
 8 center for universities to collaborate collectively  
 9 together and then normalize data and talent, because  
 10 it is a really hard thing to do even if you gather all  
 11 the great tools that Nick talked about, which are free  
 12 and available for a lot of people, somebody still has  
 13 to sit there and watch them 24/7, 365 days a year and  
 14 make sure that we're protecting, you know, our assets,  
 15 our digital assets from attackers. And trying to  
 16 maintain that kind of operation without a partner who  
 17 can help you do that certainly can be a lot.  
 18 So, you know, for big organizations, they're  
 19 tackling it well. I'm sure there's a high expense to  
 20 it for small organizations. Some of them haven't even  
 21 figured how to even start. So we need to just balance  
 22 out the fact that there's both big and small between  
 23 them.  
 24 The other thing that I think is becoming  
 25 increasingly challenging, Alex, is the fact that at

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1 least in a lot of cases the data is not even at my  
 2 location in a data center anymore. It's in a cloud  
 3 service or offers a service somewhere else that's  
 4 being managed, you know, by another organization or  
 5 multiple organizations.  
 6 So I may have, you know, several different  
 7 enterprise relationship planning software solutions  
 8 that are actually managing data. So we need to be  
 9 cognizant of the fact that data is being distributed  
 10 in ways that it's never been before. In a lot of  
 11 places, people have done a lot of paper abatement to  
 12 meet COVID restrictions and needs because of the way  
 13 we're working and they've moved a lot of things to  
 14 cloud-based services because of that in order to make  
 15 that accommodation happen.  
 16 So we've got to remember the fact that even  
 17 if we run penetration tests and vulnerability tests,  
 18 that's for our systems and services. And we heard  
 19 from this morning's sessions, what if that's at  
 20 Amazon, and what if it's with Microsoft or whether  
 21 it's with Google or Oracle or some other cloud  
 22 platform where it's not here? Because then I need to  
 23 ask them to do the same thing and they need to run the  
 24 same test and they need to give me the validations and  
 25 results, not just myself.

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1 And now we're independently validating all  
 2 of their controls and all of their things that they're  
 3 doing to protect my data that they own or they're  
 4 controlling. They don't own it, of course, but  
 5 they're actually controlling on our behalf. So  
 6 there's a lot that goes into that.  
 7 MR. IGLESIAS: Great. Thanks, Tom.  
 8 Moving on to the next topic, what is the  
 9 purpose of security logs and audit trails? How are  
 10 these beneficial to organizations and are there any  
 11 limitations doing this? And I would ask that to Nick.  
 12 MR. WEAVER: So logs and audit trails are  
 13 really important. You notice actually a lot of the  
 14 tools that I've been talking about are really logging.  
 15 So you can theoretically do proactive defense on the  
 16 network and the like. But the greater value is  
 17 actually the logging itself. You got compromised.  
 18 What did the attackers get? What did they not get?  
 19 Because if they did not get your financial disclosure  
 20 stuff or stuff like that, not only is that good for  
 21 you, or good news, but that might save you a fortune  
 22 because now you don't have to deal with the State of  
 23 California's notification business.  
 24 And basically what it comes down to is the  
 25 pen testing and the vulnerability scanning, and stuff

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1 like that is all about preventing attacks. The  
 2 logging is all about recovery: being able to do a true  
 3 damage assessment and a true recovery. And that's why  
 4 logging is so important, is because it does enable  
 5 this damage assessment and recovery that in the end  
 6 might save your corporation hundreds of thousands of  
 7 dollars.  
 8 MR. DUGAS: And to add what Nick was talking  
 9 about, I mean, it's like a crime scene. Right? So  
 10 that -- you're logging all this data and you're  
 11 gathering it all, and if you ever have to do an  
 12 incident or a breach investigation, you're going and  
 13 pouring through those logs in order to, you know,  
 14 build a case against that perpetrator or to ascertain  
 15 what they did, how they did it and what they got  
 16 access to.  
 17 If you didn't have those logs, you would  
 18 have a real hard time being able to find that  
 19 information you need to figure out what happened and  
 20 why it happened or how it happened. And so the  
 21 challenge is that you can -- you gather a lot of these  
 22 logs and logs consumes data and storage, and that data  
 23 and storage consumes a lot of costs. And so you have  
 24 to make sure you understand how much data you need to  
 25 retain for logs and how long you're going to keep

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1 them, and more importantly those logs have to be  
 2 protected as if it's a case file and an investigation.  
 3 They need to be protected and secure to make sure that  
 4 it can't be altered; to make sure they're not being,  
 5 you know, changed by somebody who doesn't have  
 6 permission to do so.  
 7 So certainly it's something that is really  
 8 critical for what we do. But it's also a lot of  
 9 things we do after the fact. We're not -- we're not  
 10 -- we've got to still prevent people from getting in  
 11 and doing it, but after the fact if you don't have  
 12 them, you don't really have the necessary means to  
 13 actually do anything to investigate correctly.  
 14 MR. WEAVER: And there's one other problem  
 15 of you don't know until after you're trying to  
 16 investigate what you wish you logged. And so as a  
 17 consequence, when in doubt, error on more aggressive  
 18 and error on basically right only.  
 19 So a big blob of disk that just gets stuff  
 20 because, like, for example, Lawrence Berkeley Labs  
 21 does very aggressive logging of the network. And they  
 22 have used decade-old logs of connectivity in  
 23 investigations. And a properly run network monitor  
 24 would embarrass the NSA with how aggressive you do it.  
 25 So, for example, the NSA did bulk recording

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1 of network data for five days, and they were oh-so-  
 2 proud. Lawrence Berkeley Labs does bulk reporting of  
 3 network data and keeps it for months. Raw packets,  
 4 just because it might be useful in an analysis.  
 5 MR. LEE: I like one of the things that you  
 6 called out there, Nick. And particularly you said  
 7 this phrase, a well architected network logging  
 8 system. And I 100 percent actually agree with you,  
 9 and I think one of the challenges, though, is like how  
 10 many people have the expertise to actually do that.  
 11 And that's where, you know, some of this  
 12 guidance and things like that that the FTC is putting  
 13 together really needs to be considerate, also,  
 14 especially of the capabilities of the institutions  
 15 doing this. You know, because, yes, we can definitely  
 16 actually set up monitoring, et cetera, et cetera. But  
 17 envision a scenario where it's like a 200-person  
 18 company or like a 400-person contractor or that kind  
 19 of scenario. Do they have the people on staff that  
 20 can actually put monitoring in place so you're  
 21 actually effectively grabbing the correct logs?  
 22 I 100 percent agree with you. Like, you  
 23 want as much security telemetry as possible. Some  
 24 telemetry is actually more useful and more important  
 25 than others. And you do need trained personnel that

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1 can actually help make that useful. You know, it's  
 2 definitely great to just have kind of, like, all of  
 3 the logs, but then you also get into the scenario that  
 4 I think you, Nick and Scott, have already, you know,  
 5 touched on. Well, now you also need the expertise to  
 6 actually go through that data. Right? So, like,  
 7 having the forensics is great and there are definitely  
 8 third parties that can come in post-incident that can  
 9 study the logs that you have. But it's also useful  
 10 internally that you have somebody that can actually go  
 11 through that data and see if it actually is useful or  
 12 relevant.

13 And when it comes to what some of those  
 14 tools and expertise looks like, it can get really  
 15 expensive. You've already mentioned Splunk.  
 16 Everybody is very well aware of Splunk. I don't think  
 17 there's anybody that is happy with their bill from  
 18 Splunk. But it is, it's one of those tools where  
 19 there just aren't a lot better. I mean, there's  
 20 QRadar, there's SomaLogic, there are tools that are  
 21 still bringing that price down. But it is, for --  
 22 especially for small companies, it's cost-prohibitive,  
 23 in particular if they only have a really small budget  
 24 for security.

25 And, once again, there are open source tools

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1 that are really, really great, you know, like, you  
 2 know, ELK, the stuff that, you know, Cisco released  
 3 Garseki SOX (phonetic), et cetera. But it comes back  
 4 to, oh, well, now you're trading expertise time for  
 5 money. At the end of the day, you always are paying  
 6 for this really, really small set of experts; those  
 7 either experts you hired in-house or experts in  
 8 somebody else's company. You know, if you're going  
 9 like the managed security service provider route,  
 10 you're still paying somebody else and still kind of  
 11 beholden to that.

12 So I think it's actually one of the things  
 13 to always be considerate of when we talk about  
 14 logging. We definitely want to encourage companies to  
 15 do that, but we should be realistic about what their  
 16 capabilities will be around that and what value they  
 17 can get out of having those logs.

18 MR. DUGAS: And, Flee, along those lines, I  
 19 mean, Ponemon Institute said it takes 197 days to find  
 20 an incident this year, right? One hundred and ninety-  
 21 seven days. And you've got to remember how many days  
 22 that actually people keep logs for and do they keep  
 23 197 days, enough of it to be able to go back.

24 Many organizations don't, and that's  
 25 unfortunate because it takes a hard time to see it.

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1 Even if we have all the monitoring, and Scott can  
 2 maybe talk to this, how many of even -- when you do a  
 3 penetration test, how many of them actually see you  
 4 doing that, Scott? I mean, we can invest a lot of  
 5 money and time, but I don't know how many actually see  
 6 those attacks happening and those tests? Maybe a lot,  
 7 maybe a little. But I know the smaller ones are  
 8 probably less prepared to do so.

9 MR. WALLACE: Yeah. Or with a two-week  
 10 assessment frame, we're generally a little noisier  
 11 than a normal attacker would be that would be much  
 12 slower with packets going back and forth, you know?

13 Another one of the paradigms that's emerging  
 14 now is to just assume that you're going to get  
 15 phished. This is difficult for many people to accept  
 16 because we want to believe that if we show people  
 17 training videos that they won't click on anything.  
 18 But that's not proving to be reality.

19 So basically with some endpoint protection  
 20 and network segmentation like I described earlier,  
 21 that's kind of a new paradigm that organizations are  
 22 moving towards and just trying to assume breach and  
 23 then contain it once it's inside.

24 MR. WEAVER: And I'd just like to add, it's  
 25 slightly off topic on phishing, but how many have

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1 received emails about mandatory security training that  
 2 are indistinguishable from a phishing attack?

3 MR. WALLACE: Yeah.

4 MR. WEAVER: The other thing is, is if your  
 5 infrastructure and setup allows it, security keys are  
 6 great because this cannot be phished.

7 MR. IGLESIAS: All right. Moving along, we  
 8 have a question from the audience for Tom. In a  
 9 university environment for GLB Safeguard purposes, are  
 10 you concentrating primarily on student information  
 11 systems? What about the data, customer info, that has  
 12 legs outside of financial aid?

13 MR. DUGAS: So at least in my perspective --  
 14 and I can't speak on behalf of a lot of other  
 15 universities -- I try to treat all the data that is  
 16 sensitive in a restricted data format in the same way.  
 17 And I try to protect it to the same degree following  
 18 as closely as I can to NIST 800-171 compliance  
 19 regulations in order to protect it.

20 Obviously it's quite cumbersome to try to  
 21 find all the data we have everywhere. But we do try  
 22 to make sure we cover it as much as possible and  
 23 protect it whether it's in a student information  
 24 system or whether it's in a research, you know, study  
 25 somewhere else on campus that has something that's

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1 very sensitive as well.  
 2 MR. IGLESIAS: Great. We have another  
 3 question that's asking, the Safeguards Rule is  
 4 intended to set development of the comprehensive  
 5 information security program in the context of what's  
 6 appropriate to an organization size and type as well  
 7 as nature and sensitivity of the data the organization  
 8 handles.  
 9 With that in mind, how should the FTC work  
 10 with different stakeholders, communities, covered by  
 11 the rule to identify for organizations what the  
 12 relevant standards for their industry may be in  
 13 relation to these issues?  
 14 MR. LEE: I can chime in on that at a high  
 15 level. I mean, there are tons of, you know, like  
 16 essentially business organizations and  
 17 representatives. I do think it's useful to  
 18 distinguish between the size of these companies.  
 19 What's appropriate and realistic from a security  
 20 posture standpoint and security programs standpoint  
 21 for a large financial institution, you know, such as  
 22 Goldman Sachs or Bank of America, is very different  
 23 than what it is for a 200-person company. And it's  
 24 important that the FTC recognize that and really start  
 25 to hyper-focus on particular behaviors that they want

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1 to see and the outcomes of those behaviors.  
 2 And what that means is being open to  
 3 examining the new guidance to determine if it's  
 4 really, really truly outcome-based, meaning that not  
 5 being overly prescriptive and saying that, hey, you  
 6 have to have penetration testing, thinking more along  
 7 the lines what you really want out of penetration  
 8 testing.  
 9 The assumption is that you want penetration  
 10 testing because you want to see businesses have ways  
 11 that they can proactively find security weaknesses,  
 12 and then once finding those security weaknesses,  
 13 properly prioritize those and then finally remediate  
 14 those weaknesses in a repeatable way, with the  
 15 expectation that software and information technology  
 16 is always going to have new vulnerabilities.  
 17 There are always going to be classes of  
 18 things that we're not taking into account today that  
 19 may, you know, in the future end up being vulnerable.  
 20 Like, obviously we're all aware of things like, you  
 21 know, the Hartley vulnerability that was in open SSL a  
 22 while back, or the, you know, SSE/secure enclave  
 23 issues that Intel has had, or all of these other kind  
 24 of classes of vulnerabilities.  
 25 So it's important that we really actually

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1 focus on do companies have the ability to find  
 2 security defects, and do they have the ability to  
 3 actually fix those in repeatable fashion. And what  
 4 that looks like at a large company should be different  
 5 than what that looks like at a small company. And  
 6 what that means is a small company may need to rely on  
 7 just one individual who doesn't have certain  
 8 certifications or doesn't have security in their title  
 9 but is still capable of actually doing the job versus  
 10 a large organization that, yeah, probably has, you  
 11 know, hundreds of people in their security department.  
 12 MR. DUGAS: So I want to tag a little bit  
 13 onto that. Because as we have guidance in the GLBA  
 14 Safeguards Rule specifically towards organizations of  
 15 different sizes, we need to make sure they're  
 16 expansive enough that we -- and detailed enough that  
 17 they're applying to the different organizations the  
 18 way that they're intended to.  
 19 So going back to a small liberal arts  
 20 college versus Berkeley, are they going to be applied  
 21 the same? If not, we need to define what that's going  
 22 to look like and how we're going to apply it to those  
 23 different institutions based on their Carnegie class,  
 24 for example, in research institutions. Applying on  
 25 some financial institution status and basically how

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1 they're being, you know, grouped, I guess, in their  
 2 categorization is not necessarily the same. We're not  
 3 -- we can't go based on the size of a bank, for  
 4 example. We need to go based on the size of an  
 5 institution, how we're actually deemed in our  
 6 industry.  
 7 But when we have all of these different  
 8 considerations and things that are being applied for  
 9 the changes in the rules, we've got to take into  
 10 account that putting these things into place for some  
 11 organizations isn't just going to be something we can  
 12 do quickly.  
 13 I think the proposal said something like,  
 14 you know, it should apply six months after go live.  
 15 I'd be hard-pressed to think it's going to be a year.  
 16 It would likely be two years where people are really  
 17 getting to it where they need to finish all the  
 18 components that they need to to get compliant.  
 19 So we need to take that into consideration,  
 20 too. I just don't think six months is going to be  
 21 enough. We're going to have to give enough time and  
 22 effort into this to allow those smaller organizations  
 23 to get up to speed with the things they need to, to  
 24 find the partner they need to, get the tools in place  
 25 they need, to find the services they need to get

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1 involved with and actually get the things in place  
 2 that are going to be necessary.  
 3 So comprehensive, yes, we need to keep that  
 4 all in consideration. But the specifics here, we need  
 5 to be very particular about what we need to do and  
 6 make sure we need to provide some institutional  
 7 discretion about what that looks like as well.  
 8 MR. LEE: Yeah. And I want to piggyback  
 9 also on your response again, Tom, because I think  
 10 there's one other aspect to home in on. I feel like  
 11 we may just be dancing around -- and not  
 12 intentionally, but it's like we're right on the tip of  
 13 our tongues, which is really right-sizing these  
 14 controls and what we actually want to see out of these  
 15 safeguards to the amount of data that's potentially  
 16 impacted. Right?  
 17 So if you're a small college, yeah, you have  
 18 a small student population. What you should be  
 19 looking for from that security program is going to be  
 20 different from a university that has 200,000 students.  
 21 Right? And that 200,000 students represents a larger  
 22 amount of data. And that's a larger impacted  
 23 population. It's not meaning to say that anybody  
 24 should necessarily be off the hook, but the rules that  
 25 apply for somebody that's carrying a million, you

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1 know, records of sensitive data is probably going to  
 2 look different than somebody that's only carrying  
 3 2,000.  
 4 And even moreso that some of these  
 5 businesses that are going to be subjected to this  
 6 regulation may not actually even host the data  
 7 themselves. And are we doing a good job where we're  
 8 actually maybe calling that out? We want them to be,  
 9 you know, responsible and knowledgeable about where  
 10 data flows in their ecosystem. But if they are  
 11 relying upon third-party SaaS providers for various  
 12 things, including, like, data storage, how much leeway  
 13 do we give them to leverage, you know, these security  
 14 protections that they're getting from these third  
 15 parties, et cetera.  
 16 So those are all things to actually  
 17 definitely take into account because the nature of the  
 18 data is going to look different, the nature of that  
 19 impact or potential data custodianship is going to  
 20 look different.  
 21 MR. IGLESIAS: I think this dovetails nicely  
 22 into our last question to finish up this panel. Based  
 23 on the discussion we've had, what impact do you think  
 24 the proposed amendment would have? Are these things  
 25 organizations should be doing or are there any other

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1 recommendations you have for the FTC? And we'll go  
 2 ahead and start with Tom.  
 3 MR. DUGAS: Sure. I think I talked quite a  
 4 bit about this. But I think all of the monitoring of  
 5 testing is absolutely critical for securing our  
 6 computing resources. We need to make sure we have  
 7 those in place. There are numerous threats and  
 8 attacks daily, and without proper controls such as  
 9 penetrating tests, vulnerability scans, continuous  
 10 monitoring, we're susceptible to them.  
 11 But we also need to understand that there's  
 12 a cost associated with it, whether it's personnel or  
 13 whether it's technology. And no matter how we do  
 14 that, in some ways we're only going to be able to do  
 15 that through collaboration and partnership with other  
 16 people like us. In higher education, we are very  
 17 collaborative and we do find ways to find innovative  
 18 ways to solve these complex problems. But it takes  
 19 time to get that going as well.  
 20 So just keep in mind that, again, the  
 21 Safeguards Rule only applies to that very small  
 22 portion of the data that we are actually responsible  
 23 for managing and protecting. But we need to make sure  
 24 we also protect our academic and research data as well  
 25 just as importantly. Our students and our researchers

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1 and things they produce are just as critical to us.  
 2 MR. IGLESIAS: Thanks, Tom.  
 3 Flee?  
 4 MR. LEE: Yeah. You'll probably hear me  
 5 duplicating a lot of Tom's answers. But, you know,  
 6 like I said, I believe these rules are decent, but  
 7 there's definitely some additional areas of concern  
 8 and things for the FTC to actually be aware of.  
 9 I love the fact that this is actually trying  
 10 to push to be a little bit more prescriptive, but we  
 11 have to make sure that people really understand the  
 12 actual motivation here and the overall objective. The  
 13 objective should be to incentivize, to encourage and  
 14 hold companies accountable for having good, repeatable  
 15 and understandable security programs.  
 16 And fundamental towards that is having the  
 17 ability to, you know, quickly, proactively find  
 18 security weaknesses and defects via, you know,  
 19 vulnerability scanning, penetration testing, et  
 20 cetera, to actually quickly contextualize those so we  
 21 can actually, know, properly, you know, classify them,  
 22 apply the proper resources, and actually get them  
 23 fixed. But that should allow for people to actually  
 24 have a fairly broad agreement with regards to, like,  
 25 how they accomplish those things.

169	<p>1 In particular, because these companies are</p> <p>2 going to look different, a small business of 200</p> <p>3 people is definitely different than a company of</p> <p>4 2,000, a company of 20,000, et cetera. And their</p> <p>5 security capabilities, their ability to implement</p> <p>6 these controls, are going to look different. But we</p> <p>7 should be more concerned with the outcome that we want</p> <p>8 from those controls rather than how those controls are</p> <p>9 actually implemented.</p> <p>10 I do think it's great that the FTC is, you</p> <p>11 know, looking at guidance for things like the NYDFS,</p> <p>12 et cetera, but it's also important to note that things</p> <p>13 like some of the policy requirements or documentation</p> <p>14 requirements are going to look different at these</p> <p>15 companies, and we need to make sure that when we're</p> <p>16 holding companies accountable for it that we really</p> <p>17 hyper-focus more on the outcome that we want as</p> <p>18 opposed to if they, you know, dotted every I/crossed</p> <p>19 every T, and if their policies look exactly like a</p> <p>20 large bank's policies because that's really not the</p> <p>21 reality. And then recognizing that the cost of</p> <p>22 implementing this is going to be burdensome for small</p> <p>23 companies in a way that it's not for a large company.</p> <p>24 So that's definitely something we need to take into</p> <p>25 account.</p>	171	<p>1 want to thank each of you for your time today and for</p> <p>2 a very informative discussion.</p> <p>3 (Whereupon, a recess was taken from 2:02</p> <p>4 p.m. to 2:16 p.m.)</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>14</p> <p>15</p> <p>16</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
170	<p>1 MR. IGLESIAS: Thanks, Flee.</p> <p>2 Nick?</p> <p>3 MR. WEAVER: Second or third, everybody.</p> <p>4 But I'd like to add one little thing that Tom touched</p> <p>5 on, that we should in some ways have number and type</p> <p>6 of data at risk as part of the calculation, because a</p> <p>7 small business that nonetheless has detailed financial</p> <p>8 records on everybody in the U.S. would be a huge risk</p> <p>9 in practice and really doesn't justify sort of light</p> <p>10 small business controls.</p> <p>11 While a used car dealer, the number of</p> <p>12 financial records at issue might be a few hundred or a</p> <p>13 few thousand, and so the damage in case of a failure</p> <p>14 is so much less in that case.</p> <p>15 MR. DUGAS: You're muted, Alex.</p> <p>16 MR. IGLESIAS: Sorry about that. Scott, for</p> <p>17 the final word?</p> <p>18 MR. WALLACE: Yeah, not much to add. Just</p> <p>19 segment your network and don't click on anything weird</p> <p>20 and you'll be in relatively good shape.</p> <p>21 MR. WEAVER: And get security keys.</p> <p>22 Security keys and password managers.</p> <p>23 MR. WALLACE: Amen, Nick.</p> <p>24 MR. IGLESIAS: All right. Thanks,</p> <p>25 everybody. We're out of time for this panel, but I</p>	172	<p>1 ACCOUNTABILITY, RISK MANAGEMENT, AND GOVERNANCE OF</p> <p>2 INFORMATION SECURITY PROGRAMS</p> <p>3 MS. WETHERILL: Welcome back. Thanks for</p> <p>4 joining us at today's FTC Safeguards Rule workshop.</p> <p>5 Our next panel will address accountability, risk</p> <p>6 management and governance. My name is Robin</p> <p>7 Wetherill. I am an attorney with the Division of</p> <p>8 Privacy and Identity Protection here at the FTC.</p> <p>9 And with me today are Adrienne Allen,</p> <p>10 director of security, governance, risk and compliance</p> <p>11 at Coinbase; Michele Norin, senior vice president and</p> <p>12 chief information officer at Rutgers, the State</p> <p>13 University of New Jersey; and Karthik Rangarajan, head</p> <p>14 of security at Robinhood. So thanks to all of you for</p> <p>15 being with me today; looking forward to this</p> <p>16 discussion.</p> <p>17 So I wanted to just start by asking each of</p> <p>18 you to briefly introduce yourself and tell us a bit</p> <p>19 about your experiences working in and around</p> <p>20 information security programs and in particular the</p> <p>21 aspects of those programs that touch on accountability</p> <p>22 and governance.</p> <p>23 So, Adrienne, would you like to start us</p> <p>24 off?</p> <p>25 MS. ALLEN: Sure. And, first of all, thanks</p>

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1 for having me, Robin. I've been at Coinbase now for  
 2 about two and a half years. And I should mention our  
 3 current program also includes third-party security  
 4 where we're assessing the vendor risk of the parties  
 5 that we work with, and we are also performing the due  
 6 diligence requests for partners where we are their  
 7 third party. So we do get to see both sides of due  
 8 diligence. There's a lot of accountability and  
 9 governance that goes into that. I look forward to  
 10 touching on that later.

11 And before joining Coinbase, I spent most of  
 12 my career as a consultant on information and security  
 13 and risk assessments for both federal sector clients  
 14 as well as private sector between DC and the Bay area;  
 15 primarily information security assessments again and  
 16 then later on with the implementation of a NIST  
 17 Cybersecurity Framework. And a lot of my private  
 18 sector clients have been in high-tech, energy, finance  
 19 and retail.

20 I'd say most of my work has actually  
 21 centered around accountability and governance over the  
 22 last several years in some form, primarily on two  
 23 fronts: the first really around incident response  
 24 planning, including designing operating models for  
 25 decision-making and keeping others informed, and the

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1 second around rolling out compliance and risk  
 2 assessment frameworks. That includes reporting up and  
 3 out over risk maturity, operating effectiveness of  
 4 controls over time. And I've also worked with a few  
 5 collaborative groups, including some statewide  
 6 initiatives on future-looking information security  
 7 projects and public/private partnerships, and  
 8 accountability roles and responsibilities have been  
 9 really critical to success there.

10 So, overall, I'm really happy to be here and  
 11 looking forward to the chat.

12 MS. WETHERILL: Thanks, Adrienne.  
 13 Michele, would you like to go next?

14 MS. NORIN: Sure. I'm glad to be here as  
 15 well. I have been, as Robin indicated, I'm the CIO at  
 16 Rutgers University. I've been at Rutgers for -- I'm  
 17 rounding out my fifth year as their CIO.

18 Prior to Rutgers, I was at the University of  
 19 Arizona for almost 30 years. And all of my career has  
 20 been within the central IT division. Leaving U of A,  
 21 I was CIO there for seven years before coming to  
 22 Rutgers.

23 You know, the CIO role is broader than  
 24 information security. So I have responsibility for a  
 25 variety of tools and services and support programs for

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1 the institutions. Part of that portfolio includes an  
 2 information security program in both of my roles here  
 3 and at the U of A. And so that responsibility comes  
 4 with, you know, setting up the program, making sure  
 5 we've got the right leadership, understanding the  
 6 aspects of that program, representing information  
 7 security and the program to the institution,  
 8 understanding the risks. You know, sort of all of the  
 9 strategic and decision-making components to a program  
 10 such as information security has been within my  
 11 portfolio as the CIO.

12 And I think in a little bit we're going to  
 13 talk about accountabilities, and with that comes, you  
 14 know, sometimes the CIO is the one on the hot seat for  
 15 things that come up. So I share in that  
 16 responsibility, but it is a component of a much  
 17 broader portfolio that I deal with in my role.

18 MS. WETHERILL: Great. Thanks, Michele.  
 19 Karthik?

20 MR. RANGARAJAN: Sure. Thanks, Robin, for  
 21 having me here. I'm Karthik Rangarajan. I manage  
 22 security and privacy at Robinhood. I've been with  
 23 Robinhood for a little over three years. I started  
 24 March 2017 as the security lead, and I have built out  
 25 the security and privacy teams here.

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1 The last seven years of my life have been  
 2 working for startups. I've worked in other financial  
 3 technology companies before this. And a lot of  
 4 working in startups like Robinhood and my previous  
 5 company is setting up a program that people can trust  
 6 and can rely on for making the right risk decisions.  
 7 So whether -- right now I've worked for a consumer  
 8 company; in the past I've worked for NetEnterprise,  
 9 a financial software company. And in situations like  
 10 that, when you are selling to banks and you're  
 11 selling to funds and other highly regulated  
 12 institutions, they look to make sure that your  
 13 security guarantees are at least as high as theirs, if  
 14 not more.

15 Now working for a consumer company regulated  
 16 by various authorities, we have to make sure that  
 17 whatever governance structure, whatever security  
 18 structure we have meets and goes beyond the  
 19 requirements that are placed on us and making sure  
 20 that our customers feel safe and all of the security  
 21 decisions are made in the same, consistent current way  
 22 so that everyone in the company has visibility into  
 23 how risk-based decisions work.

24 That's kind of the role I play here. And I  
 25 ultimately believe that accountability and governance

177	<p>1 really starts with the first line of defense, security                  2 teams sort of making the right calls and setting the                  3 framework for making the right calls.                  4 MS. WETHERILL: Great. So to dive right in,                  5 you know, as a few of you have noted, one of the                  6 themes of this panel is accountability. So I thought                  7 it would be useful to just start by talking about this                  8 word, accountability, which has become, you know, kind                  9 of a buzzword or often comes up in discussions around                  10 information security.                  11 And so just to set a baseline, you know,                  12 what do we mean by accountability in the information                  13 security context and how important is it as an element                  14 of an information security program?                  15 So, Karthik, would you like to start us off?                  16 MR. RANGARAJAN: Yes. I guess we'll start                  17 with what accountability is. For me, accountability                  18 is who's responsible for identifying and managing                  19 risk as well as mitigating who is responsible for the                  20 many controls, who is responsible for making sure                  21 things are safe and things are accounted for, who                  22 testifies when something goes wrong? These are sort                  23 of the parameters I think about when I think about                  24 accountability.                  25 And in most organizations, at least in</p>	179	<p>1 CIO, your lead IT person, also bears a good deal of                  2 accountability for protecting information assets.                  3 I would submit that your organization                  4 generally, the leadership, also plays a role in                  5 accountability. I think any organization has a                  6 responsibility for protecting your information assets                  7 and protecting, you know, people's identities and                  8 protecting, you know, your services and what you do as                  9 a company. And in today's world, you know,                  10 information security and the threats that come with                  11 that and how we protect, it's a pretty big deal.                  12 And so leadership bears some level of responsibility                  13 and accountability for that as well.                  14 We also take a shared approach. We like to                  15 remind members of our community, depending upon the                  16 role they play or the job that they do, that they have                  17 a role to play as well in protecting our assets. Not                  18 clicking on links and phishing messages, you know,                  19 making sure they're not sharing their password. You                  20 know, some of those general awareness tips and                  21 reminders also plays to the fact that, you know,                  22 everyone is responsible and has some level of                  23 accountability for playing their part in making sure                  24 we're protecting our assets.                  25 And so depending upon your role and where</p>
178	<p>1 companies that are fairly small, you may have a small                  2 security team, you may have somebody that is the head                  3 of engineering or head of IT playing the security hat.                  4 And, to me, accountability is about who makes the                  5 security decisions and, when something goes wrong, who                  6 is going to show up to resolve the incident or respond                  7 to the incident, and, afterwards, when you're being                  8 questioned by the regulators, who is in the hot seat                  9 answering those questions.                  10 MS. WETHERILL: Thanks.                  11 Michele, did you want to add something to                  12 that response?                  13 MS. NORIN: Sure. And I touched on this a                  14 little bit. I completely agree with my colleague                  15 Karthik. You know, there are certainly roles that are                  16 automatically accountable for what goes on in the                  17 information security space.                  18 I will add to that, as well -- and we                  19 operate this way with our program -- we like to remind                  20 our community that there are varying levels of                  21 accountability. Certainly the CIO plays a big part in                  22 accountability. You mentioned the hot seat. You                  23 know, it's usually the CIO who, along with the CISO,                  24 the CIO is also there, you know, taking the heat for                  25 what went wrong; why'd this go wrong. So clearly the</p>	180	<p>1 you sit in the organization, clearly the leadership,                  2 the senior levels, they're going to be the ones -- me,                  3 you know, who I report to, will be the more visible                  4 ones when it comes to an incident or a situation.                  5 But, you know, at a very broad level it is shared to                  6 some degree as everyone, you know, could be a                  7 vulnerability in certain circumstances.                  8 MS. WETHERILL: Great.                  9 Adrienne?                  10 MS. ALLEN: Yeah, I agree with what both                  11 other panelists have shared. I think, you know, I                  12 agree that accountability ultimately is about                  13 ownership and being able to represent the successes,                  14 mistakes, needs of whatever is in your purview to                  15 leadership. And in a lot of ways that ends up looking                  16 like speaking truth to power. These people, the                  17 CISOs, the CIOs, you are really partnering with the                  18 business to understand what those business goals are                  19 and helping the business to then understand what are                  20 the risk outcomes of making those decisions. There                  21 may be security consequences or other technological                  22 consequences that just aren't necessarily thought of                  23 when the business is framing its objectives for the                  24 year, for the quarter or whatever the time frame is.                  25 So the CISO, the head of security, whatever</p>

181	<p>1 that role looks like, is really partnering with the</p> <p>2 business to understand those goals, developing,</p> <p>3 recommending some options, maybe even a couple</p> <p>4 different options for how to implement controls to</p> <p>5 help the business achieve those goals within the risk</p> <p>6 appetite, getting that buy-in and then moving forward</p> <p>7 on that control implementation.</p> <p>8 So I definitely see it as a highly</p> <p>9 integrated, highly partnering type of role, but</p> <p>10 ultimately, yes, it is the person in the hot seat and</p> <p>11 it's also the person that is supposed to understand</p> <p>12 the business goals, how that impacts security and</p> <p>13 making sure the business is fully informed before</p> <p>14 moving forward on something.</p> <p>15 MS. WETHERILL: Great. So to switch gears,</p> <p>16 you know, while the FTC's current Safeguards Rule</p> <p>17 requires financial institutions to designate "an</p> <p>18 employee or employees" to oversee their information</p> <p>19 security programs, the proposed rule would require</p> <p>20 that they designate a single point person who's</p> <p>21 responsible for implementing and maintaining the</p> <p>22 program.</p> <p>23 So I have three related questions about this</p> <p>24 change in the requirements. First, to what extent is</p> <p>25 a single point person already typical of what</p>	183	<p>1 it's also -- it can be very difficult to understand</p> <p>2 what the staffing and resourcing costs are when you</p> <p>3 have a distributed view. It's not coming out of a</p> <p>4 single line item. And you can sometimes have analysis</p> <p>5 paralysis. Without that single ownership, the</p> <p>6 accountability piece that we just mentioned, you can</p> <p>7 fall into traps of each relying on someone else to</p> <p>8 make a hard call. And there are hard calls in</p> <p>9 security. So with that model issues can sometimes</p> <p>10 fall through the cracks.</p> <p>11 And I'd also like to put on my third-party</p> <p>12 security hat for a second. From the standpoint of</p> <p>13 reviewing another vendor's third-party risk, before</p> <p>14 integrating them into your environment -- and, again,</p> <p>15 I'll speak from the fintech point of view where we're</p> <p>16 talking about a lot of SaaS vendors, you know, very</p> <p>17 technical integrations that can be complex in nature.</p> <p>18 You really do need to understand who oversees security</p> <p>19 specifically within that vendor organization for a</p> <p>20 couple of reasons. One, it might be during an</p> <p>21 incident. God forbid you need to know who to reach</p> <p>22 out to or even share threat intelligence with.</p> <p>23 On the first point, every once in a while a</p> <p>24 questioner or an issue will come up with a vendor.</p> <p>25 Attackers may even try to compromise a vendor on their</p>
182	<p>1 financial institutions are doing to consolidate</p> <p>2 responsibility?</p> <p>3 And, question number two, what are the</p> <p>4 benefits, if any, of that as a choice for how to</p> <p>5 organize responsibility in your institution?</p> <p>6 And, question number three, what are the</p> <p>7 costs of that as a strategy?</p> <p>8 And, Adrienne, would you like to go first on</p> <p>9 this one?</p> <p>10 MS. ALLEN: Sure. I'm happy to start with</p> <p>11 the first question. You know, I think to the extent</p> <p>12 to which this is already happening, there is a similar</p> <p>13 requirement in other financial services regulations.</p> <p>14 So, for example, the New York Department of Financial</p> <p>15 Services already has a similar ask for someone to</p> <p>16 oversee and implement the cybersecurity program.</p> <p>17 So for any company doing business in the</p> <p>18 State of New York, fintechs, for example, this isn't</p> <p>19 that new. And I think the pros of having this model</p> <p>20 is that it does or can make decisions better and</p> <p>21 faster.</p> <p>22 I think when decision-making is distributed</p> <p>23 you can run into a diffusion of information. It's</p> <p>24 harder to pull together a single view of how an</p> <p>25 information security program is running. Frankly,</p>	184	<p>1 way to trying to get at a primary target. So it's</p> <p>2 important for the sake of the incident response</p> <p>3 planning process to be able to have a single point of</p> <p>4 contact, or at least a single channel to reach someone</p> <p>5 to work with within a short amount of time.</p> <p>6 I think secondly, it doesn't need to be a</p> <p>7 CISO but it should be someone who can make that type</p> <p>8 of informed decision or quickly and appropriately</p> <p>9 escalate to leadership so you meet regulatory</p> <p>10 reporting notifications if you have any.</p> <p>11 I think sometimes, to the last question, the</p> <p>12 cost of doing this with one person, you know, for</p> <p>13 smaller companies is obviously the cost of that</p> <p>14 resource. You might not be resourced to bring in</p> <p>15 someone to focus solely on security.</p> <p>16 I think another cost is that sometimes even</p> <p>17 if you have someone, security can get relegated to a</p> <p>18 side issue. So it's really important that that person</p> <p>19 is senior or influential enough to direct and equip</p> <p>20 program resources and to be able to influence</p> <p>21 decision-making.</p> <p>22 MS. WETHERILL: Great. Thanks, Adrienne.</p> <p>23 Michele, did you want to followup on that?</p> <p>24 MS. NORIN: Sure. I completely agree with</p> <p>25 Adrienne. I think it's extremely important to have a</p>

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1 person in front of the information security program.  
 2 I think that there are so many components to  
 3 understand, to manage, to keep an eye on. I think  
 4 it's difficult to do that if it's part of someone  
 5 else's job. And so I found that it's extremely  
 6 helpful to have a person in charge of that program  
 7 just from a pure basic management perspective and  
 8 understanding perspective.  
 9 That gets difficult when you're smaller. I  
 10 get it. You know, it's hard to, you know, carve out  
 11 one person to do everything, you know, or one specific  
 12 thing. We don't always have the luxury of having  
 13 that. But if you've got one person who you know, this  
 14 is, you know -- this is it, you need to keep your eye  
 15 on this, I think it's extremely important to have  
 16 that.  
 17 When you're bigger, it makes it even more  
 18 important that you have that, that person who is just  
 19 every day constantly thinking about and managing this  
 20 kind of a program, and to raise those issues and  
 21 situations, you know, to their leadership, to the  
 22 institution or organization's leadership  
 23 appropriately. And so it takes having someone who is  
 24 dedicated in that way to serving as the lead of a  
 25 program, a CISO or otherwise, that, you know, they're

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1 responsible for the management and the progression of  
 2 the program.  
 3 MS. WETHERILL: Great.  
 4 Karthik, did you have anything to add?  
 5 MR. RANGARAJAN: Yeah. Adrienne and Michele  
 6 said some excellent things, and I won't say the same  
 7 thing. I will add that one benefit of having a single  
 8 person or team that is responsible for this is you  
 9 remove the conflict of interest, potentially.  
 10 Let's say I'm managing the engineering  
 11 organization and I'm also managing security. And the  
 12 product organization is telling me that they need this  
 13 shipped tomorrow, and I see there are security risks,  
 14 I'm probably going to listen to the product  
 15 organization and ship it and then take a look at the  
 16 security risks and figure out what needs to happen  
 17 there.  
 18 But if there was an independent point of  
 19 contact, if there was somebody who does not have that  
 20 conflict of interest, they can play those checks and  
 21 balances. They can say, okay, I hear what the  
 22 business wants, I hear what you're trying to do, but  
 23 these are the risks that are coming up.  
 24 The second component to this is certain  
 25 financial companies have the three-layer defense model

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1 where there is the security teams who play the first  
 2 line of defense, and then there is the enterprise risk  
 3 and the audit teams.  
 4 Even in those models, I think it's  
 5 especially important that the why's of security, the  
 6 simplified decision-making, lies on the security team  
 7 or on the single person that is the designated head of  
 8 security.  
 9 For a really small company, for somebody  
 10 that may have outsourced all of their business -- all  
 11 technologies, it might be hard to hire somebody or  
 12 justify the cost of hiring a point person that plays  
 13 head of security. And I think in those situations,  
 14 the way I look at it is you don't need to hire  
 15 somebody that is 20 years a CISO or something like  
 16 that. You can find somebody that is experienced, that  
 17 knows about the subject matter.  
 18 Most of the regulations that I'm familiar  
 19 with don't require you to hire a CISO but require you  
 20 to designate somebody as head of security. So find  
 21 somebody that can provide value for you, that can help  
 22 you manage risk and make security decisions in a smart  
 23 way, and designate them as your point person. And  
 24 then you get two things for the cost of one.  
 25 MS. WETHERILL: Great. Thank you for your

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1 answers on that.  
 2 So the development and implementation of an  
 3 information security program, as Karthik just  
 4 referenced, can implicate not only IT personnel but  
 5 also employees who work in other areas like  
 6 compliance. So does it make it more difficult, you  
 7 know, given that kind of diversity of involved  
 8 personnel, to have a single point person and why or  
 9 why not?  
 10 And, Karthik, I can go back to you to start  
 11 us off on this one.  
 12 MR. RANGARAJAN: Yeah. I think in reference  
 13 to my last answer, I think it depends on what the  
 14 organization is doing. Let's say all of your  
 15 technology providers are fully outsourced, you don't  
 16 build in-house software, you don't have engineers in-  
 17 house, and it's just putting things together to serve  
 18 your customers. In those cases, I think you could  
 19 outsource your security responsibilities, too, as long  
 20 as you're outsourcing to a firm, as long as -- I would  
 21 say you need a named person that you are working with,  
 22 but you can outsource it. You don't have to have this  
 23 person in-house.  
 24 However, if you are building anything in-  
 25 house, even if it is the smallest thing, if you're

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1 serving products to a customer that you built in-  
2 house, then I would say having a point security person  
3 in-house is unavoidable. Because it's going to be  
4 really hard for an external personnel to handle all of  
5 the contacts of the business, understand everything  
6 that is happening, and be in the the rooms where the  
7 decisions are being made, and do it consistently so  
8 that the business' interests are put ahead and risks  
9 are managed appropriately.

10 So if you are building in-house products, if  
11 you're building in-house services, you absolutely need  
12 a point security person. But if you're completely  
13 outsourcing it, then I would say you could consider an  
14 outsource model for security.

15 MS. WETHERILL: Great.

16 Adrienne, did you have anything to add to  
17 that response?

18 MS. ALLEN: Yeah. I think just maybe a  
19 quick analogy. One of the studies I think the  
20 Corporate Executive Board recently did was actually  
21 how software decisions are made when you're purchasing  
22 a new piece of software, potentially something that is  
23 a large system; it extends across the environment.  
24 They said that while there is a single decision-maker,  
25 there's actually an average of seven people that are

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1 involved in forming that decision.

2 And I think, you know, when we talk about  
3 other teams being involved in security and ultimately  
4 kind of rolling up to a single person, that model is  
5 actually fairly consistent here, too. You know, it's  
6 very unlikely that a single point person for security  
7 would be making decisions in a vacuum. They're going  
8 to have to cooperate with teams, like with risk and  
9 compliance, the three lines of the defense model that  
10 Karthik mentioned earlier. And that's great.

11 You know, I think to the extent that it does  
12 make decisions take longer sometimes, that's  
13 absolutely true. I think you can do it efficiently,  
14 but they're still taking new factors into  
15 consideration before making calls.

16 But at the end of the day, you know, again,  
17 I'll unpack an example that Karthik mentioned. If  
18 you're following the three lines of defense where you  
19 have, you know, the first line security, conducting  
20 operations, making these choices; you have a second  
21 line risk management that's noticing the risk about  
22 the program; third line internal audit that's checking  
23 on what the others are doing, you know, it very well  
24 may be that you have another team that's asking the  
25 security program to put segregation of duties in

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1 place. That will take time to implement. It's the  
2 new requirement being handed to the security team, to  
3 include in a building and a designing of that program.

4 But at the end of the day, you -- while it  
5 may have taken you a little bit longer to design roles  
6 and responsibilities a little bit differently, to  
7 identify maybe you need to bring someone else new into  
8 the team to distribute those responsibilities  
9 differently, they're still taking the time to decrease  
10 your chance of insider threat down the road.

11 So while the overall program might take  
12 longer in some ways because you are working with other  
13 teams, by virtue of working with those other teams  
14 you're building a model that can grow with the  
15 company; you're building a model that is more  
16 resilient to the types of risks that security programs  
17 face.

18 So I think the short answer is, yes, it can  
19 take longer and it does make it more complex to work  
20 with these other teams, but at the end of the day,  
21 their bottom-tier model, you're altogether working on  
22 a common success criteria, and then you have the  
23 single head that can more easily report out on how all  
24 of those needs are being met.

25 MS. WETHERILL: Great. Thank you.

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1 Michele?

2 MS. NORIN: Yes. I will reinforce that. I  
3 think it's critical to have a program, a set of  
4 processes and a governance model that accounts for  
5 multiple units. In my view, I don't think there's any  
6 one unit that can do all -- you know, that can address  
7 all of the components of what would need to be done.  
8 So it's important to have the partnerships.

9 I know for us as an institution, we have a  
10 couple of different working groups and committees that  
11 are responsible for, you know, the process around  
12 evaluating the software that we buy, or for responding  
13 to an incident. And those -- that group is made up of  
14 representatives from all of these other areas: IT,  
15 our risk and compliance office, our general counsel's  
16 office, our information security, IT, audit, internal  
17 audit sometimes is on there depending upon the focus.

18 So, you know, we set that up intentionally  
19 in that way so that they are all responsible for the  
20 process and a program that's well-rounded and, you  
21 know, will address all of the aspects of the  
22 institution as best we can. Right? If we need to add  
23 people in the moment depending on what we're dealing  
24 with, we can do that.

25 But it's not just information security.

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1 It's not just, you know, the risk and compliance.  
 2 They have to work together. And so we've worked  
 3 really hard to set up those components, those  
 4 partnerships, working arrangements, in that way  
 5 specifically so that each area of that -- of the  
 6 institution is represented.  
 7 And you're right. It takes longer, but in  
 8 the end, it's better, it's stronger, because we took  
 9 the extra time to really -- to really make sure we had  
 10 all the right perspectives represented in the process.  
 11 So I just throw my advocacy for, you know, making  
 12 sure that happens with those kinds of pieces in place  
 13 as well.  
 14 MS. WETHERILL: Great. So, another change  
 15 that the proposed rule would make, compared to the  
 16 current rule, is that this single designated point  
 17 person would be required to report to the  
 18 organization's board of directors or whatever the  
 19 equivalent of that is, in an organization that doesn't  
 20 have a board at least annually, and that the report  
 21 would have to be in writing.  
 22 So, you know, we're wondering about the pros  
 23 and cons of that kind of direct communication between  
 24 the individuals who are tasked with overseeing  
 25 information security and the board or senior officers

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1 of financial institutions.  
 2 So, Michele, did you want to go first on  
 3 this one?  
 4 MS. NORIN: Sure. A couple of thoughts  
 5 here. So one is, I think it's important for  
 6 information security as a topic be at the board -- at  
 7 the senior leadership level of whatever organization  
 8 you are a part of. For me, it's Rutgers or higher ed,  
 9 as well as the board. I think it's important that  
 10 they understand what that concept is, what it means,  
 11 what comes with it. It's not a one-and-done  
 12 conversation.  
 13 I know for the boards that I've worked with  
 14 with in higher ed, it's a progression of information.  
 15 It's a way to build awareness about what we do, how we  
 16 protect, where we see risks. And I think for their  
 17 level of responsibility, they need to be aware of  
 18 those subjects, those topics.  
 19 So I think that topic should be present at  
 20 those tables on some regular basis, at a minimum once  
 21 a year. It depends on your structure, your board  
 22 cadence. You know, I think your board has to be  
 23 brought into that kind of topic. I know for us that  
 24 topic lives at the audit committee, which is a  
 25 committee of our board. So I think -- so I think the

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1 topic needs to be there.  
 2 The second thought, the second item here for  
 3 me is I think who is the voice of that program can  
 4 depend upon your culture, your circumstances as  
 5 leadership. I think it takes a certain perspective to  
 6 share that messaging in a way that's effective and  
 7 clear for the audience. If your CISO can do that, I  
 8 think it's great. I think the CISO should have a  
 9 voice there. I think they should -- at a fundamental  
 10 level, if they have to raise an issue that might be a  
 11 little sensitive, they have got to have avenues to do  
 12 that, right? I mean, no question.  
 13 But in terms of regular awareness, I think  
 14 that, you know, you've got to have the right voice to  
 15 demonstrate that. Sometimes that's a CISO, sometimes  
 16 it's the CIO, sometimes it might be some other  
 17 leadership, your risk management officer, possibly.  
 18 Somebody -- and maybe it's all of those voices that  
 19 share in that messaging with leadership.  
 20 And so I think that just depends on, you  
 21 know, who the person is, how well they can talk about  
 22 the subject matter, you know, what's the interest of  
 23 the leadership and the board, and then, you know, how  
 24 do you formulate that right -- the right voice around  
 25 that, around the topic.

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1 MS. WETHERILL: Thank you.  
 2 Karthik?  
 3 MR. RANGARAJAN: Yeah. You know, from my  
 4 perspective, when you're reporting to the board of  
 5 directors, one issue that can come up is the  
 6 familiarity of the board with the topics that you're  
 7 talking about, so the familiarity of the Board with  
 8 security.  
 9 One -- a potential risky scenario is you go  
 10 to the board and say, hey, these are our high-,  
 11 medium-, low-risk items, and they get concerned that  
 12 there are so many risks that you are managing. And  
 13 the question that gets asked might be why are there so  
 14 many risks? Why haven't they gone away or something  
 15 like that?  
 16 And it's -- with qualitative risk management  
 17 mechanisms, it might be hard to say, well, this is a  
 18 high risk but it may not actually come to fruition  
 19 because of these following factors or things like  
 20 that. It gets -- it becomes a really technical,  
 21 really difficult conversation.  
 22 One mechanism that I've been experimenting  
 23 with that is gaining traction in the security industry  
 24 as a whole is this quantification frameworks, which is  
 25 instead of qualitative mechanisms that talk about here

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198	<p>1 So presenting to them in such a way that                  2 they're actually able to use that to make decisions                  3 and provide input is something I would strongly                  4 recommend. It's something that we have been trying                  5 out.</p> <p>6 MS. WETHERILL: Thanks, Karthik.                  7 Adrienne, did you want to jump in?                  8 MS. ALLEN: Sure. I just have one or two                  9 things to add. I definitely agree with both of the                  10 prior comments. First, quantification is likewise                  11 something that we're starting to experiment with as                  12 well, and it can be a very helpful kind of neutral way                  13 of characterizing some of the risks.</p> <p>14 I do think it's worthwhile to call out that,                  15 you know, security landscape, the threat and                  16 vulnerability environment, the risk landscape, changes                  17 so quickly. For most businesses that do any kind of                  18 business online, you know, they may see risks on a                  19 daily basis that emerge. So having an annual                  20 reporting cadence is -- you know, I agree with                  21 Michele, probably the bare minimum for a lot of the                  22 financial institutions, and especially the ones that                  23 do have an online presence to be able to report out on                  24 progress over time.</p> <p>25 I think that, you know, especially given</p>	200	<p>1 And I think as a requirement, annual makes sense.</p> <p>2 I think, you know, in order to kind of take                  3 a look at your model for reporting to the board,                  4 decide on the right cadence, that may be a more risk-                  5 adjusted decision based on the type of financial                  6 services company that you are. And if you do have                  7 that online presence, then you might want to identify                  8 opportunities to provide greater visibility throughout                  9 the year than just one long report at the end, which,                  10 you know, again, kind of comes back to the business                  11 visibility to produce that type of report, make it                  12 meaningful, get the meaningful feedback in return.</p> <p>13 MS. WETHERILL: Great. Thank you. So that                  14 requirement that we were just discussing is an example                  15 of a kind of trend in the new rule to generally                  16 increase the amount of decision-making that financial                  17 institutions have to put into writing. So that report                  18 to the board is one example. Another example is that                  19 while the current rule requires that financial                  20 institutions engage in a risk assessment, under the                  21 proposed rule, you know, that assessment would have to                  22 be also in writing.</p> <p>23 So we are curious what you think about, you                  24 know, that kind of requirement, whether putting                  25 decision-making into writing fosters accountability</p>

201	<p>1 within institutions or what are the benefits or costs 2 of that as, you know, a procedural requirement. 3 So, Adrienne, do you want to comment on 4 that? 5 MS. ALLEN: Sure, yeah. So I think my 6 answer is similar to what I just mentioned, is it 7 depends mostly on how it is used and revisited over 8 time. So I think, yes, you know, first as financial 9 institutions, most requirements that I'm familiar with 10 ask for some form of a risk assessment. So financial 11 institutions, a lot of which are most likely doing 12 this anyway, I think it's a natural step for asking 13 that they should be written. 14 So let me talk first about the benefits and 15 then the costs. I think on principal reporting 16 decisions it's helpful when you're taking a risk-based 17 approach. You want to be able to revisit decisions in 18 light of technical changes, resourcing changes, 19 additions to the environment, or, frankly, just the 20 passage of time. 21 I think it helps you understand how long ago 22 a decision was made, whether things have changed. It 23 minimizes individual interpretation of that decision. 24 So people might hear something and then go off with 25 their separate marching orders, each thinking that</p>	203	<p>1 them to that joint commitment that you both made 2 earlier, and provide the rationale for the exception 3 and why, you know, they may or may not see it extended 4 if they haven't been able to do that. So, yes a lot 5 of value to being able to track these decisions over 6 time, come back to the specific rationale. 7 I think on the cost side, you know, 8 formalized documentation can be a huge time cost to 9 the business when it's too heavy-handed. So I do want 10 to caveat that a little bit. I think when it comes to 11 evidencing decision-making there should be more 12 flexibility. 13 For example, in some of the examples I just 14 gave, we might be making risk-based decisions in 15 different mediums and different ways: IT service 16 management tickets, code reviews, project design 17 documents, to name a few examples. So I think it's 18 important to note that businesses should have the 19 flexibility to record decisions in different ways. I 20 think it's perfectly realistic that the sum of a lot 21 of those small decisions might rise up to the level of 22 going into more formalized risk assessment, and 23 that's perfectly effective as well. 24 So, again, there may be a formalized risk 25 assessment. There may be a set of other decisions</p>
202	<p>1 they've heard a version of that. And it does create 2 clarity over company policy. 3 I think there have been many instances, 4 especially in environments where decisions are being 5 made quickly all day throughout the day where 6 something comes up, it rings a bell, you then have 7 your prior analysis to go look back on. You can then 8 either reinforce that prior decision that was made or 9 adjust it based on the changes in the risk appetite or 10 resourcing. 11 I think two examples here stick out to me. 12 First, we see this all the time in the third party 13 landscape, memorializing decisions about why you chose 14 to accept or reject a given vendor comes up a lot. 15 You might be a year later choosing to integrate that 16 vendor with three of your critical systems. So you 17 really do need to be able to rely on the earlier 18 detail and some of the tradeoffs that you made when 19 onboarding them in the first place. 20 And then, second, it also helps with 21 exception management. I think security often holds 22 other teams accountable for their own work. You may 23 grant a team an exception to go fix something and in 24 three months time you can come back, followup with 25 them, identify whether or not they've fixed it, hold</p>	204	<p>1 that are made outside of that. I think as long as you 2 have a consistent method of deciding when and what is 3 appropriate for what, then it shouldn't all need to be 4 in a single place where you can go back and look at 5 all of that. 6 So, overall, yes, writing things down is a 7 great step, but there are many ways of doing it. As 8 long as everyone is aligned on how you are providing 9 visibility then it's great. That's what I would say. 10 MS. WETHERILL: Thanks, Adrienne. 11 Karthik, do you have any comments on written 12 decision-making? 13 MR. RANGARAJAN: Yeah. I agree with 14 everything Adrienne just said. Going back to the 15 three layers of defense model where the security team 16 is the first layer and then you have the risk 17 management and audit teams as second and third layers, 18 whenever the security team makes a decision that 19 impacts the business in meaningful ways, maybe it's to 20 choose a major vendor or other vendor, whether it is 21 an outsourcing model or anything that people may 22 disagree with, there may be multiple stakeholders. 23 It's important to have clarity on how that decision is 24 made and why that decision is made. 25 And especially now in the current remote</p>

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1 world that we live in, written documents have gone  
 2 much farther than they used to before. You can't just  
 3 get into a meeting room and hash it out. And so  
 4 writing a one-pager or writing a message on Slack has  
 5 had more impact than multiple sets of meetings would  
 6 have.  
 7 So purely from an efficiency standpoint, I  
 8 have actually come to believe that writing things down  
 9 is more helpful than not writing things down. Even  
 10 though it might seem as overhead, even though it might  
 11 seem as undue process, writing things out for major  
 12 decisions -- and that's the qualifier I want to add,  
 13 major decisions. You don't want to write a one-pager  
 14 for why you chose to reject this code review over that  
 15 code review. That doesn't -- that doesn't really rise  
 16 to the level everyone is speaking. Well, maybe tying  
 17 it to a risk score, tying it to the -- tying to the  
 18 overall risk management framework and saying for all  
 19 higher or critical risk decisions, we want to have a  
 20 written documentation for why certain decisions were  
 21 made.  
 22 If risk is accepted for our higher -- major  
 23 risk is accepted, people have written documentation as  
 24 to how we accepted this risk, what controls we looked  
 25 at, what controls we are going to build and how we

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1 attained that consensus across the company, so that  
 2 the next time you have to make a similar decision you  
 3 can follow the precedent that was set.  
 4 And this doesn't just happen for third-party  
 5 vendors. This doesn't have to be just for product  
 6 decisions. This could even be for actions you take in  
 7 the case of a security incident or something like  
 8 that. Let's say you have a security incident but you  
 9 don't notice or you don't find evidence of breach or  
 10 don't find evidence of any malicious activity, you  
 11 could write that down, memorialize it in the company  
 12 so that the next time something like this happens you  
 13 don't have to have this discussion all over again.  
 14 You can look back at your previous precedent and say,  
 15 okay, this is what we followed, let's stay consistent  
 16 with our decisions so that not only do you now have an  
 17 easier way to make decisions in the future, you also  
 18 have defensibility for your legal and audit partners  
 19 in the future.  
 20 MS. WETHERILL: Great.  
 21 Michele, I'd love to know if you have any  
 22 comments on this issue, in particular, and I invite  
 23 other panelists to chime back in. But I'm interested  
 24 if anyone thinks there are costs associated with these  
 25 kinds of requirements that the FTC should take into

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1 consideration in deciding whether to press forward  
 2 with some of these changes.  
 3 MS. NORIN: So I don't have a whole lot to  
 4 add to my -- to what my colleagues have said. I  
 5 think, you know, it is generally good practice to  
 6 document. And as Karthik said, not every little  
 7 nitty-gritty thing, but, you know, certainly major  
 8 reports, major decisions, processes, steps that have  
 9 been taken, incidents, all of those things.  
 10 I mean, I think that if anything, you know,  
 11 in a year or two years after that particular moment in  
 12 time, you need to remind yourself, why did we decide  
 13 that? You know, why did we decide that? What were we  
 14 thinking? And you can go back and look at the  
 15 documentation. So I just think it's generally good  
 16 practice to document.  
 17 In terms of costs, you know, I think it's  
 18 just the time factor. I think if you go overboard,  
 19 yes, it can be overly disruptive and it depends on  
 20 sort of, you know, your organization, your size, how  
 21 generally you operate, you know, how much process and  
 22 procedure you have generally. I mean, you know, that  
 23 factor -- those pieces can shape, you know, how much  
 24 you do and then thus the time factor which then leads  
 25 to the costs.

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1 I mean, if you're spending all day  
 2 documenting and you can't get anything else done, that  
 3 might be an issue and you might -- there might be  
 4 questions about that.  
 5 So, to me, the cost is really the time  
 6 factor and the tradeoff of, you know, who is it that's  
 7 doing the documentation, and then what are they not  
 8 doing because you're doing documentation? And is  
 9 there value add there and what's that balance?  
 10 So to me it's really time and effort in  
 11 terms of what it takes to actually do the  
 12 documentation. If you're getting an assessment by an  
 13 external party and it's a formal process, yeah, I want  
 14 to see the report. You're paying them to assess you  
 15 and produce a report that's actionable. And so there  
 16 is a cost factor, and that -- in that specific  
 17 instance where I'm paying somebody to come in and do  
 18 this for us.  
 19 But I know that up front and I have a  
 20 decision to make about, you know, the fact that I'm  
 21 going to spend money on that kind of an exercise. So  
 22 it seems to me the biggest cost internally is just  
 23 really the time factor, and maybe the tradeoff if you  
 24 don't document and something happens and then you have  
 25 to go back and take the time to think about what you

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1 did a year ago because you should have documented and  
 2 you didn't. So there is kind of the reverse cost  
 3 effect as well if you aren't documenting at the right  
 4 level.  
 5 MS. WETHERILL: Yeah, thank you for your  
 6 comments on that. So you brought up third parties,  
 7 which makes a great segue because the next topic I  
 8 would like to ask about relates to the way that third  
 9 parties operate under the proposed rule.  
 10 So the proposed rule would specifically  
 11 state that it's permissible for a financial  
 12 institution to hire a third party to basically fulfill  
 13 that designated point person role as long as the  
 14 institution maintains kind of ultimate responsibility  
 15 for overseeing that third-party vendor.  
 16 So I'm wondering if that provision makes it  
 17 easier or financial institutions, particularly those  
 18 who may be sensitive to costs, like smaller  
 19 institutions, to comply with the rule's requirements  
 20 and, you know, whether on the other hand there are  
 21 disadvantages to allowing third parties in that kind  
 22 of a role.  
 23 So, Michele, I'm going to turn it back over  
 24 to you to start us off on this question.  
 25 MS. NORIN: So I think, you know, third

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1 parties can be -- can be helpful to fill that role,  
 2 particularly given the size of your organization. I  
 3 think it's an interesting balance to consider. I'm an  
 4 advocate for even if you have a third-party who  
 5 manages your program, I think it's important to have  
 6 someone inside the organization who is managing that  
 7 relationship.  
 8 We work with a lot of third-party entities  
 9 in all aspects of our operation. And as much as, you  
 10 know, we put a lot of trust in what they do and  
 11 they're really good partners and they do really good  
 12 work for us, we need to be managing that. Sometimes  
 13 you just have to manage those relationships. And I  
 14 think the same would be true for an information  
 15 security program. You still need someone who is  
 16 ultimately the voice inside your organization  
 17 responsible for that program, whether you're doing it  
 18 with your own team or you're managing an external  
 19 team. I think it's important.  
 20 I also think that the idea of having a  
 21 third-party serve in that capacity, particularly  
 22 around information security, I think there's things to  
 23 consider there in terms of what is your culture,  
 24 what's the culture of your organization. Is that --  
 25 you want -- I advocate for having an organization who

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1 knows you as an entity. They know your organization,  
 2 your culture, how you operate, your risk tolerance.  
 3 That might be hard to do from a third-party  
 4 perspective, especially if they have a portfolio of  
 5 entities that they support. You know, they've got --  
 6 they have to know your nuances to know, okay, well,  
 7 you know, what things are relevant here and, you know,  
 8 what are the aspects of their level of tolerance  
 9 around risk that we have to account for in the  
 10 program.  
 11 So I think it can fill a role if you don't  
 12 want to stand up your own internal resources. But  
 13 maybe it's a split role, at a minimum, with  
 14 management, but maybe even your team itself where you  
 15 still have some internal resource as well as being  
 16 supplemented or bolstered by a third-party entity.  
 17 I just think in these cases, it's helpful to  
 18 have ownership within and that true commitment to  
 19 protecting, you know, the assets from within the  
 20 organization.  
 21 MS. WETHERILL: Great. Thanks, Michele.  
 22 Karthik, did you have anything to add on  
 23 that topic?  
 24 MR. RANGARAJAN: Yeah. I think I mentioned  
 25 this earlier, but if you -- if you're building

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1 products and services in-house, then it becomes key  
 2 that you have somebody internally managing the  
 3 program, even if you depend entirely on third parties  
 4 to manage the program. But it's key that you have  
 5 somebody present the what-if's of security in-house  
 6 that's not completely outsourced.  
 7 Third parties, there are a lot of good  
 8 services you can get from third parties if you want  
 9 penetration testing, vulnerability assessment, even  
 10 risk management. You don't have to become an expert  
 11 in risk assessment technologies. You can hire people  
 12 to do that for you. But you need somebody in-house  
 13 that can translate that and that can convert that into  
 14 something that is meaningful for your business.  
 15 So if you hire a third-party to do all of  
 16 it, they don't live and breathe with your business.  
 17 They don't work with your business all the time. So  
 18 they are only going to give you the perspective, the  
 19 outside perspective. But to get an inside  
 20 perspective, you might want to have somebody in-house.  
 21 From my perspective, is it imperative to  
 22 have somebody in-house? I think that's kind of where  
 23 the qualifier comes in, where if you're building in-  
 24 house systems, then, yes, it becomes imperative that  
 25 you have somebody in-house, even if that is not a

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1 designated security person, even if it is somebody on  
 2 engineering that's managing these -- or some engineer  
 3 in IT that's managing these folks. But it is  
 4 imperative that there is some person, there is a  
 5 person whose job it is to think about security for the  
 6 firm.  
 7 If you're not managing in-house systems, if  
 8 everything is external, as I said, everything is  
 9 outsourced, then there is more flexibility, I believe,  
 10 for these in terms of getting these third parties to  
 11 understand how these outsourced systems work. You can  
 12 get guarantees from our outsourcing providers, too,  
 13 where if you're -- at least if you're doing vendor  
 14 security assessments and things like that at the  
 15 outset, you can get guarantees from these outsource  
 16 providers that they are doing the right things from a  
 17 security perspective.  
 18 So that's where this is. It depends on how  
 19 your business works. There is obviously a cost  
 20 associated with having somebody in house that is  
 21 managing security for you. Security is almost always  
 22 seen as a cost sector, even though that is the  
 23 function everybody looks for when there is the biggest  
 24 incident that happens.  
 25 But I think it comes down to the fact that

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1 you have to make the call that is right for your  
 2 business and how your business operates. And no  
 3 matter which way you go, there's going to be a cost.  
 4 Whether you hire a person or whether you outsource,  
 5 there's going to be a cost and it's figuring out which  
 6 cost you're more willing to accept.  
 7 MS. WETHERILL: Great. Thanks, Karthik.  
 8 Adrienne, did you have any comments about  
 9 the costs or benefits of using a third-party?  
 10 MS. ALLEN: I agree with what's been said  
 11 before. I think there is, again, a time and a place,  
 12 and it very well may be along the maturity curve that  
 13 you start with a third-party and eventually move  
 14 towards someone coming in-house.  
 15 I agree that, you know, they actually are  
 16 going to have less insight into some of the business  
 17 drivers. It's going to take more work to get there.  
 18 And I do think it's worth noting, too, that at the end  
 19 of the day they still do have that split mission and  
 20 even cost incentive between their employer and the  
 21 company that they're supporting. And that is not  
 22 nothing. You know, they're going to be incentivized  
 23 to bring in money for their employer and they're also  
 24 incentivized to provide the best quality work for you.  
 25 But sometimes -- and on occasion those two things may

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1 be at odds.  
 2 I think there's also the question of  
 3 knowledge transfer, too. If you are relying solely on  
 4 third parties then turnover may be more of a risk.  
 5 You just have less insight into some of the external  
 6 factors that might impact the third party that you're  
 7 working with. So if you've been working with a  
 8 dedicated partner for a while and they leave or  
 9 something else happens, then you might be at risk of  
 10 losing some of that knowledge, that institutional  
 11 knowledge, that they've built up.  
 12 So, again, I think, you know, maybe this is  
 13 where some of the documentation and just process comes  
 14 into play. Not that you're paying for them to do  
 15 that, but in order to have effective knowledge  
 16 transfer when you have some kind of a handoff. That  
 17 becomes even more important with third parties.  
 18 And then I think briefly, Robin, just to go  
 19 back to the prior question on documentation, and  
 20 actually really tier two is that there may be an  
 21 element of privilege that comes up when documenting  
 22 part of an information security program or specific  
 23 risk decisions that may have been made in response to  
 24 a particular regulatory requirement.  
 25 We see this a lot on the privacy side, for

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1 example, where the laws are still emerging in some  
 2 places and there may be room for a particular opinion  
 3 about the company's decision to implement something or  
 4 not implement something. So I think that partnership  
 5 between legal and security also becomes more important  
 6 when deciding, you know, what are the major things  
 7 that we want to document; when do we want to retain  
 8 attorney/client privilege in some of those things.  
 9 And then same thing here with third parties  
 10 as well. You know, I think one of the drawbacks of  
 11 working with third parties is that you can't really  
 12 allow for their own training and development. There  
 13 are employment laws around that. And so, you know, I  
 14 think ultimately building into a workforce that knows  
 15 your services, your technology, enabling them to  
 16 invest in their own career path and learning  
 17 development is something that you can't do with a  
 18 third-party. You basically take them as they come.  
 19 So I think that's another drawback as well. But it's  
 20 more important to consider the long run, not  
 21 necessarily right away when using a third party but  
 22 certainly as you work with one over time.  
 23 MS. WETHERILL: Okay. Thank you, Adrienne.  
 24 We just have a few minutes left, so I want  
 25 to very quickly try to address some of the audience

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1 questions that we received. And here's one that I  
 2 think we haven't discussed, and I think this really --  
 3 I'm going to direct this to Michele, but if others  
 4 have comments, feel free to weigh in. But I think  
 5 this is an interesting issue.  
 6 So the question says, please address the  
 7 issues that may be presented at public institutions  
 8 subject to open records requests. And if the annual  
 9 written report is detailed as to vulnerabilities,  
 10 could that create a roadmap for bad actors?  
 11 And so I'm interested to hear if this is an  
 12 issue that has come up in any of your work and how you  
 13 have kind of worked around that.  
 14 MS. NORIN: It has absolutely come up.  
 15 Having served, you know, in public institution  
 16 settings, we are subject to overt type circumstances.  
 17 And so we try to balance that as best we can. We  
 18 don't -- you know, there are ways that we can get to  
 19 the details that would be considered sort of under the  
 20 purview of our general counsel that would give us some  
 21 layer of at least internal-eyes-only type of  
 22 perspective. But it is an issue.  
 23 And, you know, we were talking about  
 24 documentation earlier. Everything that is as a record  
 25 of our operation is subject to being requested by

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1 outside entities. And so it is what it is. We  
 2 operate around that and we do the best we can in, you  
 3 know, just trying to create documentation and enough  
 4 information that we can take action on. But it  
 5 doesn't give away or create an even bigger  
 6 vulnerability for us in terms of, you know, how we  
 7 produce those kinds of reports.  
 8 I know, for example, in dealing when I give  
 9 reports to our board sometimes, I will give reports  
 10 that are oral, not always on a piece of paper.  
 11 Depending upon the certain circumstances, that may be  
 12 an approach that, you know, would work in a particular  
 13 incident or something that I need to convey.  
 14 But, you know, I think that's where it's  
 15 important to have a really good relationship and  
 16 operating procedure with the legal counsel or general  
 17 counsel's office so that, you know, we are following,  
 18 you know, the essence of the requirement of those  
 19 kinds of requests, but yet also, you know, making sure  
 20 that we're not creating a different kind of liability  
 21 internally.  
 22 MS. WETHERILL: Okay, great. So we have one  
 23 minute left. So as a lightning round, if everyone  
 24 could just very quickly go around and say, you know,  
 25 if you had to pick kind of one strategy or feature of

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1 an information security program that for you is the  
 2 best or most effective way to build accountability  
 3 into the program, what would that feature be? And I'm  
 4 going to start with Adrienne.  
 5 MS. ALLEN: I think if I had to pick one, it  
 6 would be going back to that idea of a single person  
 7 who's accountable and making sure that they have  
 8 enough influence to make security management an issue.  
 9 I think, you know, as long as security is going to be  
 10 a second-class topic to some of these other management  
 11 issues, then it's much less likely to get integrated  
 12 with the rhythm of the business.  
 13 MS. WETHERILL: Great, thanks.  
 14 Michele?  
 15 MS. NORIN: So we like to work with carrots  
 16 and not always sticks, but sometimes if we need a  
 17 stick a couple things we've done in the past is cost  
 18 sharing in incident response situations with the unit  
 19 that has caused an issue. So if we've had a breach,  
 20 for example, and we figure out that it was something  
 21 that we've been trying to work with a particular  
 22 department around and it just hasn't quite stuck, then  
 23 sometimes having to pay to remediate builds a little  
 24 bit of a different level of awareness.  
 25 MS. WETHERILL: Great. All right.

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1 And, Karthik, I'll let you kind of have the  
 2 last word, so go ahead.  
 3 MR. RANGARAJAN: Yeah. I'd say the biggest  
 4 thing -- I think I would say two things. One is  
 5 having the central point person that we've talked  
 6 about, having security be represented at management  
 7 and having this person write these risk quantification  
 8 reports I spoke about earlier, having that will give a  
 9 way to keep accountability for this person and for the  
 10 company as a whole.  
 11 The second thing is measure why security  
 12 matters for this company. Like, how does it impact  
 13 your customers; how does having this person make your  
 14 product better or worse for customers, and how can  
 15 this work well for the business and the company in the  
 16 long term, having some sort of mechanism to metrics  
 17 along that can help the business make these decisions  
 18 in a much better way. And it will make it easier for  
 19 us to have the carrots and sticks we need to do our  
 20 jobs well.  
 21 MS. WETHERILL: Great. Well, thank you so  
 22 much again to all the panelists for joining us. It's  
 23 been a great discussion. We really appreciate your  
 24 help and your input today. And thanks to everyone  
 25 who's tuning in. We will now take a 15-minute break

221	<p>1 and then be back with our final panel of the day. So                  2 thanks again and have a great afternoon, everyone.                  3 (Whereupon, a recess was taken from 3:18                  4 p.m. to 3:31 p.m.)                  5                  6                  7                  8                  9                  10                  11                  12                  13                  14                  15                  16                  17                  18                  19                  20                  21                  22                  23                  24                  25</p>	223	<p>1 bilinear map-based cryptography.                  2 Randy Marchany, who is joining us from                  3 Virginia Tech, he is the CISO of Virginia Tech and has                  4 been there since -- has been acting as CISO since                  5 2010. He has 30 years of experience in cybersecurity                  6 and has been a senior SANS Institute instructor since                  7 1992.                  8 Finally, Wendy Nather is joining us from                  9 Austin, Texas. She is the head of advisory CISO team                  10 at Duo Security, now part of Cisco. Wendy has led                  11 security at a Swiss bank and in Texas state                  12 government. She has served as research director for                  13 the security practice at 451 Research, and was                  14 research director for Retail Hospitality ISAC.                  15 So, welcome Matthew, Randy and Wendy. Thank                  16 you very much for participating in the panel today.                  17 Now, as we've been discussing throughout the                  18 day, these proposed amendments to the Safeguards Rule                  19 are process-based. However, there are two instances                  20 where they would require financial institutions to                  21 adopt specific security safeguards. And that would be                  22 in encryption and multifactor authentication. However,                  23 the proposed Safeguards Rule allows flexibility and                  24 implementation and alternative controls if approved by                  25 a person in charge of the program.</p>
222	<p>1 ENCRYPTION AND MULTIFACTOR AUTHENTICATION                  2 MS. MCCARRON: Hi. Good afternoon and                  3 welcome to the fifth and final panel of the GLB                  4 Safeguards Rule workshop. My name is Katherine                  5 McCarron. I'm an attorney at the Division of Privacy                  6 and Identity Protection of the Federal Trade                  7 Commission.                  8 This afternoon, I am joined by three experts                  9 who will address the issues of encryption and                  10 multifactor authentication. I'd like to take a moment                  11 to introduce them, please, before we dive into the                  12 substance of our panel.                  13 I would also like to say that if anybody                  14 listening in the audience has questions for our                  15 panelists, please feel free to email those questions                  16 to the email address <a href="mailto:safeguardsworkshop2020@FTC.gov">safeguardsworkshop2020@FTC.gov</a>.                  17 Thank you very much for participating in the workshop                  18 today.                  19 First I would like to introduce Matthew                  20 Green. Matt is a cryptographer and associate                  21 professor at the Johns Hopkins Information Security                  22 Institute, where he teaches cryptography. His                  23 research focus is in the area of applied cryptography                  24 and includes techniques for privacy enhanced                  25 information storage, anonymous payment systems and</p>	224	<p>1 So, first of all, I'd like to start with                  2 encryption. The proposed encryption requirement would                  3 require that all customer information held or                  4 transmitted be encrypted both in transit over external                  5 networks and at rest.                  6 Some points to note about the proposed                  7 amendment's language. First, the encryption                  8 requirement would apply only to customer information,                  9 and it would apply only to transmitted information                  10 when it's transmitted over external networks.                  11 The proposed rule does not require any                  12 particular technology or technique. Finally, if a                  13 financial institution determines that encryption is                  14 infeasible, it may use effective alternative                  15 compensating controls that -- as long as they're                  16 reviewed and approved by the person in charge of the                  17 program.                  18 So I'd like to, first of all, start by                  19 asking Matthew whether encryption has become                  20 sufficiently inexpensive and simple to adopt that it                  21 should be required for all financial institutions when                  22 handling sensitive data?                  23 MR. GREEN: Okay. Well, first off, there                  24 are, as you just mentioned, different kinds of                  25 encryption. There's encryption for data in motion and</p>

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1 there's encryption for data at rest. In the data-in-  
 2 motion setting, we have some types of encryption, for  
 3 example, SSL and now called TLS, which have become  
 4 extremely efficient over the last few years and  
 5 efficient to the point that they're almost universally  
 6 adopted. I think website usage is above 80 percent  
 7 and other types of services are using them at similar  
 8 rates.

9 So overall the efficiency of these  
 10 technologies has gotten to the point where the  
 11 computational cost is just a few percent in addition  
 12 to what you already have to deal with in most cases  
 13 using normal data transmission.

14 The biggest cost really is certificate  
 15 management. People have to install and maintain  
 16 certificates. But even that has become much easier  
 17 thanks to things like Let's Encrypt where you can get  
 18 free TLS certificates and install them on your  
 19 machine. So essentially the costs have gone down to  
 20 the point where I think if you're not using TLS  
 21 encryption for data in motion, then, you know, you're  
 22 making a sort of unusual decision that's outside of  
 23 the norm, at least outside of your network.

24 Data at rest is a much more complicated  
 25 point because there are many different ways to do

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1 that. So I won't sort of go into all of that right  
 2 now. But certainly data in motion is much more  
 3 feasible to do.

4 MS. MCCARRON: Okay. Thank you very much.  
 5 Randy, I'd like to followup with you. Can  
 6 you provide your perspective on encryption and whether  
 7 it has become sufficiently simple or inexpensive to  
 8 adopt that it should be required by all financial  
 9 institutions?

10 MR. MARCHANY: Yeah. I mean, I agree, you  
 11 know, entirely with what Matt said. For in motion,  
 12 especially through doing any type of web-based  
 13 traffic, it is a no-brainer. I mean, in fact,  
 14 most people don't even know it's being done for them  
 15 because it's been set up by the web server users.

16 Web-based traffic is one way that sensitive  
 17 data is transmitted. Another way that sensitive data  
 18 is transmitted is the crazy standard email attachment.  
 19 I'm sending you a financial form. I'm encrypting that  
 20 form as an attachment and I'm sending that to you.

21 And as Matt alluded to at the end, that's  
 22 where it gets a little crazy in terms of what type of  
 23 encryption methods are you going to use, you know, in  
 24 making sure -- there's two cases. One is when you're  
 25 all inside your organization's umbrella; Virginia Tech

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1 to Virginia Tech, for instance. But if I'm sending  
 2 something from Virginia Tech to, say, Matt at Johns  
 3 Hopkins or Wendy at Cisco, we have to make sure that  
 4 they can decrypt whatever it is that I'm sending to  
 5 them and vice versa. So there's got to be a lot more  
 6 coordination done that way.

7 For us at Virginia Tech, we start off with  
 8 the data classification. We say any high-risk data  
 9 has to be encrypted at rest or in transit. And high-  
 10 risk data is any data that's covered by regulations.

11 The one curious thing about the proposed  
 12 safeguards is they don't -- I believe they need to be  
 13 delayed before they come out because they're not  
 14 taking into account the new environment that we're in  
 15 right now. We have cloud infrastructure. We're  
 16 working from home. And while that does make  
 17 encryption still not that difficult, but the way the  
 18 Safeguard Rules are worded, that needs to be  
 19 addressed. And so from the safeguard standard, there  
 20 needs to be some change done; from the user standard,  
 21 not that much.

22 MS. MCCARRON: A followup question for you  
 23 when you were talking about data that you received  
 24 from other parties: how frequently do you have data  
 25 that should have been encrypted and was not?

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1 MR. MARCHANY: Well, I mean, it happens.  
 2 You know, a lot of times, especially in the case of  
 3 financial aid where parents, you know, are using their  
 4 Gmail system or whatever, they put something in the  
 5 clear and send it to us, and we can't really do  
 6 anything about that. That's outside of our bubble, so  
 7 to speak. But the moment it comes into our control,  
 8 then our encryption standard kicks in.

9 MS. MCCARRON: Do you have particular tools  
 10 that you can use to try to find the sensitive data so  
 11 you know where it is so you can protect it on  
 12 university systems?

13 MR. MARCHANY: Yeah. And this is -- this is  
 14 something that everybody does. There is one -- I'm  
 15 not connected with this company in any way, shape or  
 16 form. But there's a company called Spirion, and Palo  
 17 Alto and a number of other ones have features like  
 18 this. But basically they have tools that do search  
 19 for what we would call PCI, you know, or PII data,  
 20 personally identifiable data; social security numbers,  
 21 credit card numbers, driver's license numbers,  
 22 passport numbers.

23 You know, it's not a perfect tool. It  
 24 doesn't have complete functionality across all the  
 25 major platforms, but it certainly covers Windows well.

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1 And that's -- you bring up a great point because  
 2 before you can encrypt it, you have to find it. And  
 3 we're all digital pack rats. We have folders from,  
 4 you know, 15, 20 years ago that may have Social  
 5 Security numbers in them.  
 6 So, yes, we have to find it first; decide do  
 7 we still need it. If the answer is no, get rid of the  
 8 file. If the answer is yes, then encrypt it.  
 9 MS. MCCARRON: And then a final followup for  
 10 you, Randy. I wanted to ask, you know, the Commission  
 11 is interested in the costs of these proposed  
 12 amendments to the Safeguards Rule. So as a financial  
 13 institution scales up, how much does it increase the  
 14 cost to encrypt data, and just using Virginia Tech as  
 15 an example?  
 16 MR. MARCHANY: Well, if you're going to use  
 17 a vendor product, you need to look at their licensing  
 18 structure. They may have a charge per license, per  
 19 user. It may be a blanket thing. A common  
 20 denominator might be to use Microsoft Office file  
 21 encryption. It meets the AES standards. It's  
 22 password, you know, based. But you can, you know,  
 23 deal with that situation. But if I'm sending  
 24 something to Matt or to Wendy at their respective  
 25 things, I could use Office encryption and then out of

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1 band send them the password and they can open it up  
 2 and do whatever they need to and store it using their  
 3 own local encryption systems.  
 4 So it's going to depend on the costs. But  
 5 if I were looking at uber-cheap enterprise-wide, we're  
 6 already paying for Microsoft licenses and encryption  
 7 is already built into the Office environment. So  
 8 spreadsheets, .xls, DocX, PowerPoint and a number of  
 9 other Microsoft Office products all support that  
 10 encryption feature.  
 11 MS. MCCARRON: Thank you. That's very  
 12 informative. I'd like to turn to multifactor  
 13 authentication and talk about the requirement that  
 14 would be in the proposed amendments to the Safeguard  
 15 Rule.  
 16 The proposed amendment would require  
 17 financial institutions to implement multifactor  
 18 authentication for any individual accessing internal  
 19 networks that contain customer information. And as  
 20 all of you know very well, multifactor authentication  
 21 must include two of three factors. The first is the  
 22 knowledge factor, which is things that you know such  
 23 as passwords or biographical information.  
 24 The second factor is the possession factor,  
 25 things that you have. That could be tokens or

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1 possession of devices.  
 2 The third factor is the inherence factor,  
 3 things that you are, such as biometric  
 4 characteristics, fingerprints or voice.  
 5 The text of the proposed amendment lays out  
 6 these items, but what it doesn't say is whether or not  
 7 you can use SMS as an appropriate factor for  
 8 multifactor authentication.  
 9 So, Wendy, I'd like to turn to you first and  
 10 ask, what is your view on whether SMS is an  
 11 appropriate factor for multifactor authentication?  
 12 MS. NATHER: Well, there are certain risks  
 13 with SMS that are very well known by now. Sort of the  
 14 implied possession factor for SMS is that you possess  
 15 the phone. But what it really turns out to be is that  
 16 you possess the phone number and attackers do have  
 17 ways of stealing that phone number out from under you,  
 18 which is NIST had announced that they wanted to  
 19 deprecate the use of SMS.  
 20 But when they made that announcement, there  
 21 were a lot of objections, including from me, for a  
 22 number of reasons. First of all, it's the cheapest  
 23 and most widely available method for sending a code  
 24 out. And in most of the world, people do not  
 25 necessarily have smartphones. They have to use SMS.

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1 So for financial institutions who cannot  
 2 control the devices that their partners or their  
 3 customers or even their employees are using, they're  
 4 stuck with what's available. So there are plenty of  
 5 times when you have to fall back to SMS.  
 6 Now, as far as the phone number or the SIM  
 7 jacking problem, I have talked to telco companies that  
 8 are trying to address that issue. They realize that  
 9 it's a problem. And I think a big challenge will be  
 10 to get telco providers around the world to get  
 11 together to address that threat.  
 12 So is SMS the best solution? No, it isn't.  
 13 But we don't necessarily tell people that they have to  
 14 use, you know, bank-level security on their front  
 15 doors, either. It may be practical and usable for a  
 16 certain number of risk cases. And so there's no way  
 17 to bar them from using SMS.  
 18 MS. MCCARRON: Okay. As a followup  
 19 question, Wendy, I wanted to ask you, how do financial  
 20 institutions make that risk-to-cost decision? So when  
 21 they're trying to decide do we invest in bank grade  
 22 security or something else, how do they make that  
 23 decision?  
 24 MS. NATHER: In a lot of different ways.  
 25 And as Randy intimated, some of it depends on

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1 licensing, how things are bundled together. When I  
 2 was working for the Texas Education Agency, for  
 3 example, we could not afford to send people, staff, in  
 4 the districts hard tokens. We simply couldn't afford  
 5 it. And the other problem was that interacting with  
 6 our systems was more of a role than it was an  
 7 individually assigned account. So we were never able  
 8 to be sure exactly who was going to be using an  
 9 account to log in and do the state-mandated reporting.  
 10 So that's an example.

11 Another one is that even if MFA is provided  
 12 for free. For example, Duo offers up to 10 licenses  
 13 for free. There are organizations that don't  
 14 necessarily have the expertise or the people who can  
 15 even set it up. If you're looking at a CPA firm that  
 16 has, you know, three members and none of them are  
 17 technical people, then even if they have free MFA,  
 18 they may have trouble using it. That's what I refer  
 19 to as the security poverty line.

20 And then finally what you want to do -- and  
 21 financial institutions want this as much as anybody --  
 22 is to be able to use factors that are easiest to use  
 23 at the point of authentication.

24 Now, I have a slide that I think we can  
 25 bring up here from -- thank you -- from a Duo industry

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1 report. And I have to say, I have to caveat this by  
 2 saying that we looked at data based on people who were  
 3 using the Duo product and looking at which factors  
 4 they tended to use the most often.

5 So you can see in this chart we picked four  
 6 really popular industry sectors. We picked healthcare  
 7 and financial services, higher education and the  
 8 federal government. And you can see the different  
 9 factors that a user has to be involved with, you know,  
 10 that the user has to actually touch or use or interact  
 11 with. There are many other factors that are available  
 12 that are kind of hidden to the user, but this is the  
 13 one that involves the users.

14 And you can see that simply clicking a  
 15 button, what we call the Duo push, and saying, yes, I  
 16 really do want to log in, clicking that on an app is  
 17 the most popular. But they will also use the option  
 18 of a phone call to a landline where they pick up the  
 19 phone and say -- you know, and they hear press 1 to be  
 20 connected, and they press 1 and then they can hang up  
 21 again. And that's very popular. Twenty percent of  
 22 healthcare uses that for one reason or another. It  
 23 may be easier for the doctors and the nurses and so  
 24 on.

25 You can see here that SMS passcodes are

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1 already falling out of favor in general among the  
 2 users. Where they have a better alternative, they do  
 3 tend to use it. So despite the fact that SMS is still  
 4 necessary sometimes, it's a good sign that  
 5 organizations are using it less and less.

6 And then, of course, hardware tokens are  
 7 very popular in the federal government. We don't see  
 8 that going away anytime soon.

9 So I hope this gives us a good picture of  
 10 what organizations are using today, not just for  
 11 reasons of cost but for reasons of usability for their  
 12 users.

13 MS. MCCARRON: Thank you. Yes, that is very  
 14 informative.

15 Randy, I'd like to turn to you next and ask  
 16 the same question in terms of how financial  
 17 institutions make the risk-to-cost decision. And if  
 18 you could, you know, just let us know about how  
 19 Virginia Tech made those decisions when it was  
 20 implementing multifactor authentication. And you're  
 21 on mute.

22 MR. MARCHANY: When it comes down to this,  
 23 it basically is, again, high-risk data versus low-risk  
 24 data. And so the big risk is are there financial  
 25 penalties if there's a breach. Is there -- you know,

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1 Virginia has a data breach notification law. What's  
 2 that going to cost us if there is a data breach. You  
 3 know, if a high-risk data breach happens, it's not  
 4 only my office, the security office, that gets  
 5 involved; the data owners, the CFO, for instance, gets  
 6 involved.

7 But the public relations wing of the  
 8 university gets involved because we have to set up,  
 9 you know, press releases. You know, things like  
 10 what's a hidden cost. The institution pays for a  
 11 year's worth of credit monitoring for however many  
 12 people -- however many records are, you know, exposed.  
 13 Right now I think that price is somewhere around 15  
 14 bucks a record. So you get a 6,000 record, you know,  
 15 breach and multiply that by 15, and that gives you the  
 16 cost just for credit monitoring.

17 Now, again, maybe 5 to 10 percent of the  
 18 people who are offered credit monitoring take that.  
 19 But you have to reserve that amount of money in case  
 20 everybody does. So there is a financial risk, you  
 21 know, involved with that.

22 We moved to two-factor authentication in  
 23 2016 as a result of a recommendation from a task force  
 24 that I chaired back after we had a breach in 2013.  
 25 And multifactor was -- two-factor authentication was

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1 one of the recommendations. Our CIO basically gave  
 2 our team, the central IT staff, a year to implement  
 3 it. And, you know, we ripped the band-aid off, so to  
 4 speak. July of 16, all faculty, staff and students  
 5 were two-factor.  
 6 Now, we had a six-month transition period  
 7 where we could get the early adopters and we worked  
 8 out most of the bugs before the final date. But, you  
 9 know, right now we have over 156,000 users at Virginia  
 10 Tech.  
 11 Again, with regard to the Safeguards Rule,  
 12 universities and colleges are in an interesting spot  
 13 with regard to the regulations because we handle, you  
 14 know, financial aid. So that says, yes, we're a  
 15 financial institution under the GLBA definition. But  
 16 that's not our primary business. So our primary  
 17 business is not financial. It's a much more open  
 18 model.  
 19 And so under the current standards, we have  
 20 that flexibility to -- where they leave it up to us to  
 21 adjust to our model. I bring this up because, as  
 22 Wendy mentioned about with the phones, you know, we've  
 23 -- BYOD, every student at Virginia Tech is required to  
 24 own a personal computer. 33,000 students. You know,  
 25 we have 6,000 of them, or somewhere between 5,000 and

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1 6,000 come every year. They own their own devices.  
 2 We don't control those devices. Some of the students  
 3 have text-only plans. Some of them don't have -- more  
 4 than I thought don't have smartphones. They use flip  
 5 phones. They may have their phone or text plans  
 6 charge them for text messages, and so they incur a  
 7 cost if they're using SMS.  
 8 And so, you know, how do you -- you have to  
 9 address that type of stuff. BYOD for us is not a big  
 10 deal. We've been doing it since 1984. But a lot of  
 11 the rest of the world is now, you know, how do we deal  
 12 with this with work from home? You know, are you  
 13 using an institution, you know, owned device or are  
 14 you using your home computer? So there's lots of  
 15 things you have to take into account that way.  
 16 MS. MCCARRON: Thank you very much.  
 17 Now, one of the questions that is raised by  
 18 the proposed amendments to the Safeguards Rule are  
 19 whether there are instances where multifactor  
 20 authentication is not appropriate for users accessing  
 21 sensitive information, or put another way are there  
 22 circumstances where it may be more difficult within a  
 23 common infrastructure for financial institutions  
 24 affected by the rule to use MFA?  
 25 In those circumstances, I want to talk about

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1 what would be -- what are reasonably equivalent or  
 2 more secure access controls that could be approved by  
 3 a CISO?  
 4 So, Matt, can I start with you, please?  
 5 MR. GREEN: So, you know, there are a lot of  
 6 different ways to do this, to provide alternative  
 7 access controls. A lot of them really do kind of fall  
 8 under the general category of MFA because MFA is just  
 9 such a broad term.  
 10 But leaving that aside, I mean, nowadays one  
 11 of the things that most people think about when they  
 12 think about MFA and 2FA is these little key fobs that  
 13 you carry around. This is kind of the classical  
 14 version of what 2FA is. But nowadays we carry phones  
 15 with us basically everywhere. Your phone can be your  
 16 car key. It can be sort of everything that you use.  
 17 And phones nowadays have modern secure hardware  
 18 processors inside them. They have biometric sensors  
 19 and readers. So we can increasingly get a lot of the  
 20 security we need just through these devices that we  
 21 already have by storing cryptographic authentication  
 22 keys on the devices and then using the phone to  
 23 actually activate those.  
 24 It is MFA but I think it's a more practical  
 25 version of MFA that's maybe a little bit more, you

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1 know, friendly for people to use. And then there are  
 2 other techniques that people can use. For example,  
 3 there are these behavioral systems that look for  
 4 patterns of behavior in the way that people access  
 5 systems and try to identify fraud. I don't know if  
 6 they're particularly effective in all cases but  
 7 certainly people do deploy systems like that. So  
 8 there are some options.  
 9 MS. MCCARRON: Thank you.  
 10 Wendy, I wanted to ask the same question to  
 11 you. Are there other circumstances where you think  
 12 that a financial institution would need to use  
 13 something other than MFA that would be reasonably  
 14 equivalent or more secure access controls?  
 15 MS. NATHER: Where it might be difficult is,  
 16 again, for smaller financial institutions that are  
 17 below the security poverty line where they're very  
 18 heavily dependent on the third-party software that  
 19 they're using.  
 20 For example, I have seen tax preparation  
 21 companies that are using cloud-based services that use  
 22 email as a poor man's multifactor authentication. In  
 23 other words, you log in with your password and then it  
 24 sends you an email back to your address of record with  
 25 a code that you then have to type in. That's the

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1 cheapest and slowest and, you know, kind of least  
 2 reliable method there.  
 3 But, again, it's what the smaller  
 4 organizations are stuck with. Because the level of  
 5 influence that a company has may determine whether  
 6 those companies can make their third parties use  
 7 multifactor authentication.  
 8 In cases where state governments, for  
 9 example, have to contract to very small firms, this  
 10 may not be possible at all for the very small firms  
 11 that they're contracting with. It can be difficult  
 12 for mid-sized companies to force those third parties,  
 13 especially with certain software that can't be  
 14 replaced.  
 15 You asked about whether there are any times  
 16 when it's inappropriate to use MFA. And the only  
 17 thing that really comes to mind is if availability is  
 18 much more important than confidentiality, when you  
 19 have to get access to something because of public  
 20 safety.  
 21 For example, a healthcare provider once  
 22 said, I would rather not see my patient dying on the  
 23 gurney with their privacy intact because I couldn't  
 24 get into the equipment that I need to save them. So  
 25 that kind of thing could be a very good reason when

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1 MFA is not -- either not practical, not appropriate or  
 2 it needs to fail open if there's any question about  
 3 whether, you know, people can get access.  
 4 Sometimes MFA may not be necessary because  
 5 the risk is being mitigated by other factors. For  
 6 example, I had a healthcare provider ask me how to use  
 7 MFA in a sterile operating theater where you cannot  
 8 sanitize any of the things that we would normally  
 9 bring in for multifactor authentication. But if  
 10 you're looking at the real risk scenario around that,  
 11 if it's a sterile operating theater, it's probably  
 12 physically secured. If you locked down the account so  
 13 that it could only be accessed from the equipment  
 14 inside of that operating theater, you might not  
 15 actually need MFA. So there are a lot of different  
 16 ways where you could put in alternatives if it really  
 17 becomes too impractical.  
 18 MS. MCCARRON: And, Randy, may I ask you,  
 19 can you think of any circumstances of where a  
 20 financial institution would need to put a reasonably  
 21 equivalent or more secure access control in place?  
 22 MR. MARCHANY: Well, the business process is  
 23 always going to trump the security process. That's  
 24 been my experience with this. But I think in the  
 25 beginning a lot of financial services sort of shield

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1 away from MFA because they thought it was, you know,  
 2 too difficult or people wouldn't use it. And it's the  
 3 seat belt problem. You know, in the '60s when seat  
 4 belts were being mandated by the federal government,  
 5 automakers rebelled. They said customers will never  
 6 buy this. And then an automaker -- if I remember  
 7 right, it was American Motors -- they started  
 8 marketing it as a safety feature. And then all of a  
 9 sudden they noticed a little uptick in their sales  
 10 because, oh, it's a safety feature; I'm going to buy  
 11 that.  
 12 And we've seen sort of something similar  
 13 happen with financial institutions that now they're  
 14 marketing this as a safety factor. This is one more  
 15 piece of our security portfolio to, you know, help  
 16 ensure the security of your financial data that you're  
 17 entrusting with us.  
 18 So I think you're seeing that shift. Where  
 19 it goes south is -- as Wendy said, is a lot of  
 20 vendors, software vendors, still aren't -- haven't  
 21 gotten it yet to at least provide APIs or some sort  
 22 of, you know, mechanisms to allow us to hook an  
 23 authentication system, two-factor or not, into their  
 24 software. And so, you know, that needs to be  
 25 addressed.

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1 I think shared assessments, you know, if  
 2 everybody in the industry says, hey, these vendors,  
 3 their software packages support 2FA or MFA, these guys  
 4 don't, I think that's a way that we can apply pressure  
 5 on the vendors to kind of move into the MFA  
 6 requirement with the shared assessment process.  
 7 But as Wendy said, public safety. You know,  
 8 if you're a first aid, first responder, you're there,  
 9 you're dealing with an accident victim or whatever,  
 10 you don't have time to just say let me get my fob and,  
 11 you know, jam it in there. In some cases, you don't  
 12 even have time to log in. So public safety certainly  
 13 would be the one time when I would be, you know,  
 14 really considerate of the fact that it might not work  
 15 in that environment.  
 16 MS. MCCARRON: All right. But no financial  
 17 institution situations come to mind?  
 18 MR. MARCHANY: I can't think of one that  
 19 would want to do that because their competitors would  
 20 immediately say our version is safer. You know, and  
 21 sooner or later, you know, that's going to hit their  
 22 bottom line.  
 23 MS. MCCARRON: So I'd like to ask, then,  
 24 about what possible alternatives there are to  
 25 encryption and multifactor authentication.

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1 So let me just start, Wendy, I'd like to ask  
 2 you first. Starting with MFA, what is your view about  
 3 whether IP address restrictions are a reasonable  
 4 equivalent to MFA? Yes, go ahead.  
 5 MS. NATHER: Yeah. I was going to say, no,  
 6 please! IP addresses, we know, are not practical as  
 7 -- especially as a single authentication factor. We  
 8 know they can be spoofed. And, in fact, the entire  
 9 zero trust security movement these days is in reaction  
 10 to our realization that you cannot trust something  
 11 just because it comes from a certain IP address.  
 12 Now, it used to be that IP addresses were  
 13 used as proxies for geolocation. We would assume that  
 14 if you came from this IP address, you must be inside  
 15 the office building and therefore you were safer  
 16 because you came through physical security and there  
 17 were other things that happened in the background to  
 18 authenticate you. But we know now that that's not  
 19 safe.  
 20 And, in fact, relying on IP addresses for  
 21 authentication and for trust has resulted in some  
 22 really large famous breaches, including in the 2000s  
 23 when government-backed attackers attacked a lot of  
 24 high-tech companies including Google and took  
 25 advantage of the fact that users were being trusted if

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1 it looked like they came from inside the internal  
 2 network.  
 3 So I don't recommend that at all anymore.  
 4 Sometimes you still need to use geolocation as part of  
 5 your authentication or access restriction because of  
 6 data privacy laws based on country or that sort of  
 7 thing. But we have much better technology to do that  
 8 now. We have GPS-based access control that works  
 9 better.  
 10 MS. MCCARRON: Okay, thank you.  
 11 Matthew, I'd like to ask you the same  
 12 question. Can you share with us your view about  
 13 whether IP address restrictions are a reasonable  
 14 equivalent to MFA?  
 15 MR. GREEN: Yeah, I absolutely agree with  
 16 Wendy. I mean, IP addresses are, you know, the burner  
 17 phone numbers of the internet. Right? Anyone can  
 18 just VPN to another location, use different IP  
 19 addresses. It's a terrible way to try to actually  
 20 authenticate people. You know, there are more  
 21 sophisticated network-based attacks where you can  
 22 actually, you know, pretend to be from a specific IP  
 23 address, and those are more complicated to execute.  
 24 But just moving around to different parts of the  
 25 internet is something that's available to really the

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1 lowest common denominator of attackers, I think, at  
 2 this point.  
 3 MS. MCCARRON: And what about device or  
 4 account restrictions like behavioral fingerprinting as  
 5 an alternative?  
 6 MR. GREEN: You know, this is not my area of  
 7 expertise, but part of the reason that I work in  
 8 encryption is because there's a certain amount of  
 9 certainty around encryption. If you encrypt something  
 10 and you secure the keys well, it stays protected.  
 11 It's sort of like putting it in a bank vault. Whereas  
 12 with behavioral type of technologies where you're  
 13 looking for patterns of misbehavior, you don't get  
 14 that certainty. There's no mathematical theorem that  
 15 says, hey, I can detect this attacker who's in your  
 16 system. There is some hopeful probability it works,  
 17 but I guess from my perspective the difference between  
 18 that possibility it might detect somebody and the  
 19 certainty that information will stay protected,  
 20 there's just such a big delta between those two  
 21 things, I don't feel comfortable with the probability.  
 22 MS. MCCARRON: Okay. The proposed  
 23 amendments to the Safeguards Rule would permit a  
 24 financial institution to use something other than  
 25 encryption or multifactor authentication as long as

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1 the CISO had approved it in writing.  
 2 So, Randy, I wanted to ask you, as the CISO  
 3 of Virginia Tech, to walk us through what that would  
 4 be like for a CISO to have to write a justification to  
 5 approve an alternative method other than encryption or  
 6 multifactor authentication.  
 7 MR. MARCHANY: Well, as Mr. T would say, I  
 8 pity the fool that has to sign that paper. It's  
 9 really -- I would not want to be the person to do it.  
 10 In fact, if I was asked to do that, this would be my  
 11 terms and conditions, is that it has to come from the  
 12 board. The board is the one that has to tell me that  
 13 we are willing to -- the institution is willing to  
 14 accept this risk of not using it. We're going to  
 15 accept it. Go ahead and you figure out a way to make  
 16 this work and then sign -- you know, create that  
 17 document.  
 18 But this is not a bottom-up thing. This has  
 19 to come from the board down to the CEO or president or  
 20 whoever and then down to us. I just would not -- I  
 21 would stay away from that as far as possible.  
 22 MS. MCCARRON: Okay. And so what is the --  
 23 what would the burden be like on the CISO to have to  
 24 write such a justification? What would that look  
 25 like?

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1 MR. MARCHANY: Well, we would be the  
 2 scapegoat. I mean, the moment there was a breach,  
 3 then all the fingers would point to us and they'd say,  
 4 hey, you said this was the way to work. And I said,  
 5 no, what I said was the probability is, you know, much  
 6 different. But, you know, you'd have to do other  
 7 types of analysis. Maybe -- you were talking about,  
 8 you know, behavioral analysis, looking at certain log-  
 9 in times for certain user IDs. And you can sort of do  
 10 that with sort of a continuous monitoring model.  
 11 There's a lot of research going on in machine learning  
 12 and AI in that type of area of behavioral  
 13 characteristics. But, I mean, that is so far away  
 14 from where I would go. I'm not sure I'd have an  
 15 alternative plan to do that.  
 16 MS. MCCARRON: Okay.  
 17 Wendy, I'd like to ask you the same  
 18 question. Could you provide us with your perspective  
 19 on the possible burden to CISOs of having to write  
 20 justifications for using methods other than encryption  
 21 or multifactor authentication? Whether this -- does  
 22 this carve out -- does it help CISOs or does it help  
 23 financial institutions?  
 24 MS. NATHER: There are two justifications I  
 25 can think of here for why you would want the CISO to

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1 do this writing. And one justification is presumably  
 2 the CISO can attest that from a technology point of  
 3 view what they're suggesting is equivalent, you know,  
 4 functionally, whether it would work.  
 5 However, as Randy was alluding to, the  
 6 probability, the risk measurement of whether this  
 7 really is good enough is something that often is --  
 8 this decision is not made at the CISO level. It's  
 9 made at the board level in terms of whether they're  
 10 going to fund MFA or whether they're going to fund  
 11 encryption and say, no, this is just too expensive;  
 12 we're just going to accept the risk but make up  
 13 something that sounds good and write it down.  
 14 So I personally, also as a former CISO,  
 15 would much rather see -- for purposes of  
 16 accountability to see that landing at the board level.  
 17 Now, the other burden that would be on the CISO would  
 18 be to argue the sufficiency of the exception with  
 19 auditors. And in my experience that's never a good  
 20 conversation because what you end up doing is not  
 21 talking about whether functionally or technologically  
 22 this is equivalent, an equivalent control. You're  
 23 talking about whether you're really addressing risk  
 24 that neither of you really agrees on.  
 25 And so a risk discussion with an auditor as

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1 opposed to, you know, a checklist or compliance  
 2 discussion, is not good. And at the end of the day,  
 3 it doesn't even matter what the auditor thinks because  
 4 if a breach results from this alternative use, then,  
 5 again, the accountability has to go back to the board.  
 6 MS. MCCARRON: Thank you. We have a lot of  
 7 questions coming in from the audience. So I will take  
 8 the first one. And if you would like to answer it,  
 9 just please raise your hand and I will call on you.  
 10 The first question is we've had cloud  
 11 infrastructure and people working remotely from home  
 12 for a long time now, relatively speaking. Why do we  
 13 need to delay implementation of the Safeguards Rule to  
 14 account for that?  
 15 Okay, Wendy? Or Matthew. Why don't you go  
 16 first. Sorry.  
 17 MR. GREEN: Well, actually, you know, I  
 18 think Wendy is the right person to answer this  
 19 question. I can actually -- I think she --  
 20 MS. MCCARRON: Okay. All right. You first,  
 21 Matthew, then I'll go to Wendy.  
 22 MR. GREEN: Okay. Well, I mean, you know,  
 23 so the question is why should we delay. I mean,  
 24 personally, you know, I'm an academic and my view is  
 25 we should not delay. We should get these things out

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1 there immediately and there should be none whatsoever.  
 2 However, I do know that, you know, at least  
 3 from my perspective, a lot of the people that I work  
 4 with are having a difficult time rolling out entirely  
 5 new systems and, you know, making major changes in  
 6 systems that are already stressed by the fact that  
 7 we're in this situation that is -- right now seems a  
 8 little dangerous to me; things can break.  
 9 But I'm not sure, you know, if that's  
 10 exactly the best answer. So I will turn it over to  
 11 Wendy for that.  
 12 MS. MCCARRON: Okay. Wendy, what are your  
 13 thoughts?  
 14 MS. NATHER: My thought is that, first of  
 15 all, you know, this crisis hit us pretty suddenly and  
 16 there were a lot of organizations that had to scramble  
 17 either to implement remote access that they didn't  
 18 have before or to scale up what they had.  
 19 And I suspect that in many cases they put in  
 20 the cheapest and quickest thing that they could with  
 21 the expectation that this would only be lasting for a  
 22 few months and then they could go back to normal. So  
 23 there was probably not a lot of planning for the long-  
 24 term.  
 25 Where companies are now facing the prospect

<p style="text-align: right;">253</p> <p>1 of, you know, this being long-term or perhaps  2 permanent to a greater or lesser extent, they may need  3 to think long-term about more permanent  4 infrastructure. They may need to rearchitect what  5 they currently have. They may need to negotiate with  6 the cloud providers that they had to sign up with in a  7 hurry who, again, you know, for reasons of influence  8 may or may not be able to give them what they really  9 need in order to comply with the Safeguards Rule.  10 So I think all of those argue for giving them a little  11 more time.  12 MS. MCCARRON: Okay. As a followup --  13 MR. MARCHANY: I have one thing to add to  14 that, though.  15 MS. MCCARRON: Yes, please.  16 MR. MARCHANY: The biggest problem with the  17 proposed regulations is that they don't take into  18 account the limitations that an organization may have  19 when dealing with the cloud vendor. They assume that  20 we have complete control of logs, access and things  21 like that which a lot of cloud vendor providers do not  22 provide to the organization. It's our world. You  23 want to get logs of how, you know, things are used,  24 you have to go through our process.  25 And so there's a lot of things -- I mean, I</p>	<p style="text-align: right;">255</p> <p>1 while we may not be coming back -- you know, we may  2 not be dropping work from home 100 percent, I think  3 that percentage is going to stay pretty high for a  4 long time, especially when we're still in this -- you  5 know, is the pandemic going to affect our health  6 thing.  7 Cloud-based services, you know, how does  8 your organization get information it needs? You know,  9 email abuse. Somebody is threatening you with email.  10 But your email goes through Office 365 that you don't  11 control, or Gmail, for instance. How do you get that  12 information you need?  13 So that's the part that I think is a  14 weakness in the proposed regs. The current  15 regulations give us that flexibility. It's not as  16 hard and concrete and set.  17 MS. MCCARRON: Thank you for that. There is  18 another question coming in about alternatives to  19 requiring encryption. The question is, would  20 dedicated leased lines be considered an accepted  21 alternative to requiring encryption?  22 So I'd like to ask the panel for their  23 thoughts on dedicated leased lines as an acceptable  24 alternative to encryption.  25 MR. GREEN: Sure, an expensive alternative.</p>
<p style="text-align: right;">254</p> <p>1 agree with Matt. We should do this. But as a CISO,  2 I'm the one that's going to have to enforce it. And  3 there's -- it's not clear. We don't -- continuous  4 monitoring, for instance. You know, the proposed  5 regulations say you have to be able to do a  6 vulnerability scan on your end points. Well, in work  7 from home, your vulnerability scan packets are not  8 going to be going just through your network. They're  9 going to be going to your home ISP network. And your  10 ISP network may interpret that scan as an attack and  11 block it or cut you off at the home because you're the  12 one that initiated the scan.  13 So a lot of these things are not under the  14 control of the institution, and that's where the  15 weakness is in the proposed safeguards. You know,  16 take work from home out of that picture. You still  17 have to deal with, you know, try and to get logs from  18 Amazon or Gmail or even Office 365 when, you know, you  19 have to have all that stuff contractually agreed upon  20 before you set it up.  21 And as Wendy said, if you did something in a  22 hurry, you weren't thinking about, oh, I need to get  23 access to email logs or stuff like that. So that's  24 the reason why I say, you know, they need -- it needs  25 to be delayed to address these new models. Because</p>	<p style="text-align: right;">256</p> <p>1 Yeah, I mean, it seems like -- I mean, if your concern  2 is the price of encryption, I mean, maybe you have a  3 very good deal on dedicated leased lines that, you  4 know, I don't know about. But they're not cheap. I  5 used to work at AT&amp;T so I have some insight into this.  6 I guess my biggest thinking about this is it  7 really depends who your attacker is. If you're, you  8 know, worried about the National Security Agency or  9 foreign intelligence agency, the answer is, no,  10 absolutely not because we learned a few years ago that  11 those are not in any way immune to those kind of  12 attackers. But even sophisticated nongovernmental  13 attackers have in some cases shown that they have the  14 ability to sometimes be able to access these kinds of  15 systems. So it's risky. It depends on what the data  16 is. If it's financial data that has value, I'd be  17 very nervous about that.  18 MS. MCCARRON: Okay.  19 MR. MARCHANY: It could be really expensive  20 especially if your customer base is the public. You  21 know, how do you deal with that? I'm not going to set  22 up a leased line to work from home or from my phone.  23 So, you know, unless as Matt said, unless that company  24 has got a lot of money, I wouldn't say that it would  25 be an alternative.</p>

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1 MS. MCCARRON: Okay.  
 2 Wendy?  
 3 MS. NATHER: Yeah, just to pile on what all  
 4 was said. Yeah, leased lines worked great in the  
 5 '90s. I spent a lot of time doing disaster recovery  
 6 with leased lines. Believe me, encryption is a lot  
 7 cheaper today. It's a lot more flexible. It's a lot  
 8 easier. Just, you know -- I can't think of a good  
 9 reason to go with leased lines instead.  
 10 MS. MCCARRON: Okay. To followup on the  
 11 question of the cost of encryption, there's a question  
 12 from the audience that says Randy was just asked about  
 13 the cost of encryption and his answer was technology-  
 14 specific.  
 15 I would like the panel to consider the total  
 16 cost of an encryption deployment: staffing to  
 17 support, training of end-users and, of course,  
 18 software and associated licenses. I'd like to open  
 19 that up to the panel.  
 20 MS. NATHER: I would say five. The cost is  
 21 going to be five. Five what? I don't know. That is  
 22 one of the big problems with security, is that it is  
 23 very difficult for us to price an entire solution like  
 24 this. And I've tried several times as a research  
 25 analyst. It depends so much on the geographical

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1 distribution of the organization. It depends upon  
 2 what kind of technology they have, whether they're  
 3 cloud forward or not, what kind of data that they have  
 4 and so on. That's one of the big problems, is we  
 5 can't tell you how much it's going to cost.  
 6 What we can say is here's a large selection  
 7 of acceptable alternatives, try to pick the ones that  
 8 work best for you. And in the case of pricing out  
 9 what it will take for personnel who have the expertise  
 10 and the time to be able to manage these solutions,  
 11 again, for smaller organizations they're probably  
 12 going to have to rely on vendors and cloud-based  
 13 solutions where those things are built in. Just try  
 14 to use the built-in versions wherever you can. But  
 15 there's no escaping that somebody in the firm is going  
 16 to have to at least be able to talk to that vendor  
 17 about the technology and get it set up.  
 18 MS. MCCARRON: Okay, thank you.  
 19 MR. MARCHANY: Yeah, I mean, and you're  
 20 right. Now, if you're talking about a support  
 21 structure for your identity for authentication, you  
 22 have an identity management group. You have -- for  
 23 instance, we use Duo. So there's a group that  
 24 supports the Duo stuff. You know, my office looks at  
 25 Duo logs but so does the help desk. You've got a lot

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1 of people that are involved on the support side if  
 2 you're doing authentication for identity. If you're  
 3 doing encryption for, you know, files or data streams,  
 4 it can be as much, but, you know, again, it depends on  
 5 what your target is.  
 6 I mentioned the Office encryption. That's  
 7 the lowest common denominator. You know, it comes  
 8 built in, but it's a vendor thing. You can certainly  
 9 get vendor products that do the exact same type of  
 10 stuff.  
 11 MS. MCCARRON: Anyone else?  
 12 (No response.)  
 13 MS. MCCARRON: I'll move on to the next  
 14 question that I have. This is a question about  
 15 ransomware attacks, which as we heard earlier this  
 16 morning is one of the top two types of security risks  
 17 for companies right now.  
 18 The questioner has asked the panel, should  
 19 the proposed GLB Safeguards Rule go farther and also  
 20 require secure air-gapped backups of information to  
 21 minimize the impact of a ransomware attack? To me,  
 22 this seems as important as multifactor authentication  
 23 and encryption.  
 24 MR. MARCHANY: I'm going to jump into this  
 25 one first.

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1 MS. MCCARRON: Please do.  
 2 MR. MARCHANY: The best defense against a  
 3 ransomware attack is your backup system. If you get  
 4 hit with a backup -- with a ransomware attack, blow  
 5 away your -- the affected machines and restore it from  
 6 your most recent backups. That's the most effective  
 7 means to do so. You may lose a day's worth of work  
 8 but I'd rather lose a day's worth of work than  
 9 the entire, you know, cake. So our infrastructure,  
 10 you know, for ransomware is very, very specific.  
 11 Another thing is when you look at a lot of  
 12 ransomware attacks that hit organizations, what gets  
 13 encrypted in the ransomware attack is not just a file  
 14 structure on my computer. It's a file share that I  
 15 had with someone else. And we typically leave that  
 16 file share open, the permissions open, to anybody that  
 17 has access to that.  
 18 If you manipulate the permission so that  
 19 only this working group has access to these files and  
 20 this big common file share, that does limit -- I mean,  
 21 you're not going to prevent the damage but you're  
 22 going to limit the damage that can be done. That's  
 23 why we say use a separate account if you're using your  
 24 home computer because most ransomware these days that  
 25 we've seen does not require administrative privilege

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1 to do its damage. It just operates on that.  
 2 So if Wendy and I have an account, and Matt,  
 3 the three of us have accounts on my computer and Wendy  
 4 gets hit with ransomware, there's a good chance it's  
 5 only going to encrypt her files and leave our files  
 6 alone. So you can do some proactive stuff to limit  
 7 the damage. But the number one thing is backups.  
 8 MR. GREEN: Yeah. So, I mean, certainly the  
 9 question is whether we should require this. I mean, I  
 10 guess one of the nice things about ransomware today is  
 11 that if you don't protect yourself against ransomware  
 12 the way that Randy said, the consequences are you're  
 13 in big trouble and, you know, maybe your users are in  
 14 big trouble only in the sense that you can't service  
 15 them anymore. But at least their data isn't spread  
 16 across the internet. Right? It's lost.  
 17 If ransomware evolves into the kind of thing  
 18 people have been concerned about where it's actually  
 19 exfiltration where information is not simply encrypted  
 20 but is actually stolen, it's much more challenging to  
 21 do. But if that were to happen, I guess maybe the  
 22 calculation would change.  
 23 Right now I guess, you know, the calculation  
 24 that people are making is do businesses -- should we  
 25 require that businesses protect their own operations,

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1 or do we want to have rules in place to just require  
 2 them to keep confidentiality of user data? And so  
 3 these are really two things. I believe in protecting  
 4 the confidentiality of user data and I also think  
 5 people should voluntarily protect their data so it  
 6 doesn't get destroyed. But I don't know personally  
 7 whether we need to mandate that.  
 8 MS. NATHER: Yeah. The question of  
 9 ransomware is, as Matt just said, you know, partially  
 10 a confidentiality issue, especially if that data is  
 11 exfiltrated and the attacker is threatening to expose  
 12 it. But it's also an availability issue. And, of  
 13 course, we saw that with NotPetya and other, you know,  
 14 more recent ransomware attacks.  
 15 And the problem is that simply having  
 16 available an air-gapped backup is not necessarily  
 17 going to solve the whole problem. There are some  
 18 problems that are much more difficult to solve like  
 19 the level of connectivity needed amongst healthcare  
 20 providers who have to be able -- again, for safety  
 21 reasons, for health reasons, have to be able to share  
 22 data widely and allow connectivity that, you know, is  
 23 based on software that they do not control; that they  
 24 can't rewrite; that they can't say stop using SMBv1.  
 25 You know, so, again, when we get into what

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1 can we realistically enforce, we can enforce some  
 2 solutions but not all of them that we would need to  
 3 address ransomware. Is enforcing some of it better  
 4 than -- you know, better than nothing? Possibly. It  
 5 depends on how the regulations are crafted. And I  
 6 leave that to wiser heads.  
 7 MR. MARCHANY: Well, and I think we just  
 8 sort of all agreed that, you know, this is not  
 9 enforceable. I mean, the primary vector that triggers  
 10 the ransomware attacks is the end-user. You know,  
 11 they click on something. So I don't know how they  
 12 would -- how you would word a requirement in the  
 13 regulations to prevent a ransomware attack.  
 14 MS. MCCARRON: Right. We have another  
 15 question from the audience. In an earlier  
 16 presentation today, it was mentioned that CISOs  
 17 perhaps shouldn't be risk acceptors but they should be  
 18 those who say yes or no; that a risk is mitigated as  
 19 to the process or as a technical change.  
 20 So does that seem like something that is  
 21 likely to be incorporated into the updated rule, that  
 22 the board of directors or executives are the level of  
 23 risk accepters?  
 24 MR. MARCHANY: Well, that would be nice.  
 25 No, I've never accepted -- the only thing I accept

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1 risk for is the data that I'm the data owner of. My  
 2 job -- and this is from my predecessor; he set this  
 3 standard. My job is to provide technical advice as to  
 4 whether the risk that, for instance, Wendy as CEO  
 5 wants to accept. I would give her technical advice  
 6 saying, yes, the method that you want to address the  
 7 risk looks good from a technical standpoint, but I'm  
 8 not the one that's going to say you shouldn't accept  
 9 the risk or you should accept the risk based on  
 10 anything else other than the technical stuff.  
 11 MS. MCCARRON: Okay.  
 12 MS. NATHER: Yeah, I would say that the  
 13 level of risk is a long ongoing discussion between the  
 14 CISO and their management. And a lot of it has to do  
 15 with probability. And with financial institutions,  
 16 the ones who are very, very good at quantifying risk  
 17 on a financial level can sometimes approach a level of  
 18 quantifiable risk in security that makes everybody  
 19 happy at that institution.  
 20 But looking at it from the outside, it can  
 21 be difficult to say, well, I believe that  
 22 technologically speaking this will mitigate 48.5  
 23 percent of the risk that we just agreed on. You know,  
 24 that is very, very hard to do.  
 25 And the decision as to whether to accept the

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1 risk, I believe, is ultimately a business one because  
 2 mitigating that risk can cost money, effort, time. It  
 3 can be an opportunity cost where the business is not  
 4 moving forward on something else because they're  
 5 having to remediate something. And those sorts of  
 6 decisions, including reputational risk, are not the  
 7 sorts of things that the CISO can or should be making  
 8 in my opinion.  
 9 MS. MCCARRON: Okay. Thank you.  
 10 So those are the rest of the questions from  
 11 the audience. So I would like to wrap up by asking  
 12 you all to just do a quick speed round, your lightning  
 13 last thoughts on encryption and multifactor  
 14 authentication that is in the proposed amendments to  
 15 the Safeguards Rule. I would like to give everybody  
 16 just about one minute to summarize or provide any  
 17 additional thoughts. I'd like to start with Matthew,  
 18 please.  
 19 MR. GREEN: Well, I mean, first of all, I  
 20 think that we're in a great time when we've reached  
 21 the point where we can actually mandate that  
 22 encryption be used. I mean, years ago -- I've been in  
 23 this field for 15, you know, 20 years now, I guess.  
 24 And, you know, encryption used to be this exotic thing  
 25 that was very, very difficult to use, very expensive

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1 and not really feasible for securing information  
 2 security systems. And we've reached the point where  
 3 now it is something that's come to be and we can  
 4 actually build well. So I'm really happy about that.  
 5 And the same thing goes for MFA. We've  
 6 reached the point now where we know that passwords do  
 7 not work well. They are just simply not by themselves  
 8 enough of an authentication feature. And fortunately  
 9 there are a whole bunch of companies and inventors  
 10 that come up with ways to make this better. And we're  
 11 actually winning. I would say if you look at the  
 12 overall progress of attackers versus defenders, the  
 13 defenders -- when these systems are used and deployed,  
 14 the defenders can win.  
 15 And now having those systems deployed is  
 16 really the last final challenge. And I think that's,  
 17 you know, what's great about these rules, is they  
 18 start to make that happen. So that's it.  
 19 MS. MCCARRON: Thank you.  
 20 Randy, may I ask you for your final thoughts  
 21 on encryption and multifactor authentication for  
 22 today?  
 23 MR. MARCHANY: Yeah. I mean, certainly with  
 24 encryption, as Matt said, it's become more  
 25 commoditized, you know, now that it's not a big deal

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1 from a financial standpoint.  
 2 As far as MFA goes, I always tell people, I  
 3 say, look, when people push back, I said, you've been  
 4 using two-factor for at least 15 years now. It's  
 5 called an ATM card. And so when they -- when you hit  
 6 them with that, they go, oh, okay, I got you. And so  
 7 we've been doing this type of stuff over time, as Matt  
 8 said. And I think it's finally gotten into the public  
 9 psyche that these are good things to do. So it makes  
 10 perfect sense to have these requirements in the  
 11 Safeguards.  
 12 MS. MCCARRON: Thank you.  
 13 And, Wendy, may I please give you the last  
 14 word?  
 15 MS. NATHER: Please, thank you. Yes, as  
 16 Matt and Randy have both pointed out, we have a lot  
 17 more options, a lot more technologies today than we  
 18 did before that are making both of these solutions,  
 19 both encryption and MFA, easier to use, more flexible,  
 20 in some cases cheaper, and we should be encouraging  
 21 their adoption wherever possible.  
 22 Having said that, we need to maintain the  
 23 flexibility in the enforcement to allow for situations  
 24 and environments where the organization can't  
 25 necessarily rebuild everything from scratch. They

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1 have to work with what they've got.  
 2 And, also, at the same time, we can't be  
 3 absolutists about finding the perfect solution and  
 4 enforcing the perfect solution because that may not  
 5 necessarily be practical. We just have to make sure  
 6 that organizations are not using the equivalent of a  
 7 decoder ring from a cereal box to solve -- you know,  
 8 to mitigate their risk problems. But I believe we can  
 9 do that today.  
 10 MS. MCCARRON: Thank you very much. I want  
 11 to thank Matthew and Wendy and Randy so much for your  
 12 time and for your expertise. Thank you very much for  
 13 a very informative discussion. We appreciate it.  
 14 So this concludes the GLB Safeguards Rule  
 15 workshop. I wanted to thank everyone for tuning in  
 16 and for listening and for all of your excellent  
 17 questions during the course of the workshop today.  
 18 If you have additional questions or any  
 19 written comments, they may be submitted online at  
 20 regulations.gov, any written comments related to the  
 21 agenda topics or any of the issues discussed by the  
 22 panelists of the workshop today. So please file any  
 23 written comments that you have by August 12th so they  
 24 can be considered as part of this rulemaking.  
 25 Again, thank you all very much for your time and

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1 your attention today, and the workshop is concluded.  
2 Have a nice afternoon.  
3 (Hearing concluded at 4:31 p.m.)  
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