Deloitte.

Five essential steps to improve cybersecurity

Trekking toward a more secure, vigilant, and resilient organization

Canadian organizations continue to experience sophisticated cyber threats that hold the potential to disrupt business operations and service to customers. A vast majority of those threats can go undetected, or they are detected too late for an organization to avoid exposure and the associated risk.

To address the threats, preparation is paramount, but many Canadian organizations have failed to take essential steps to prepare their operations for the evolving cybersecurity landscape. For example, six out of 10 businesses do not have a security strategy in place or are unsure whether their security strategy accounts for an evolving data-centre/IT consumption model, according to a Cisco/IDC Canada security study that surveyed Canadian businesses in August and September 2014.[1]

In developing a cybersecurity strategy, it's not enough to prepare for the threats you believe you know. You should also endeavor to prepare for unknown threats.

Understanding the risk

When it comes to addressing cybersecurity, the ramifications extend to the entirety of your organization—from the smallest processes to your organization's overall ability to function effectively. An attack that results in the leak of proprietary data can destroy your competitive edge. An attack that steals private customer data can result in lost public trust and lost revenue. An attack that paralyzes even seemingly innocuous information systems can destroy your ability to operate and communicate effectively.

And these days, organizations can get attacked on more fronts than ever before. Each application of cloud-based technology or mobile technology presents a new opening through which attackers may seek to gain access to your organization's valuable information. Tools for social media also present windows through which hackers may attempt to gain insights into your organization and the type of information and systems you possess—insights they can leverage to launch an attack.

Beginning the journey

Defending your organization against a sophisticated adversary involves a multifaceted approach that ranges from executive/board member awareness to the implementation of a viable but pragmatic cybersecurity framework.

Cybersecurity involves more than understanding the capabilities and exposure of existing and emerging information technologies. It involves understanding that you are in an arms race with hackers. It involves understanding business needs, business processes, and the players involved in your business operations. It involves understanding where your greatest assets and your biggest risks are so you can focus and manage your investments to address relevant cyber threats. Improving cybersecurity is not a one-time solution. It's a journey—for IT leaders and business decision makers alike. And like any journey, it starts with a single step, followed by a few more steps.

Figuring out which steps to take—and which direction to move in—can sometimes prove a challenging decision for organizations. But there are essential steps that all organizations must take to improve their cybersecurity.

The five steps

Experiencing a cyber-attack is not a matter of *if* for your organization. It’s a matter of *when*. And the time to prepare is *now*.

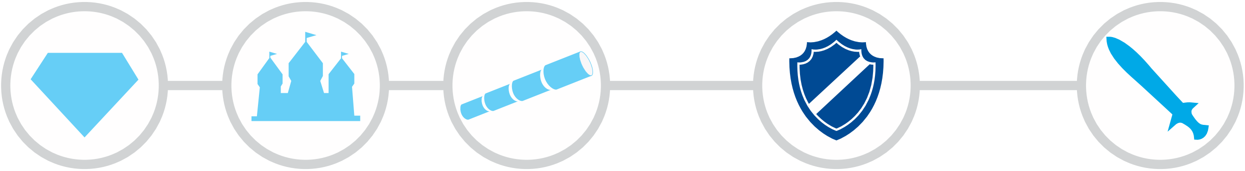
The following five steps can help you create an organization that operates securely, that remains vigilant in the face of cyber threats, and that can show resiliency when attacked. The approach emphasizes pragmatic solutions—solutions that are industry-specific and that deploy the right people, processes, and tools to address known and emerging cyber threats.

Businesses that take these five critical steps can transform themselves to become more secure, vigilant and resilient.

Vigilant

Secure

Resilient



Focus on what matters: your crown jewels and relationships

Understand critical assets and interactions.

Proactively assess your cyber risk

Know what to look for and how to detect threats—whether conventional or emerging.

Focus on awareness to build a multilayered defense

Develop a cyber program that addresses a combination of defenses for your organization, employees, customers and partners.

Fortify your organization

Have a plan to patch holes, manage patches, develop software securely, and address physical security.

Prepare for the inevitable

Focus on incident management and simulation to “test your gates” and your response.

1 Focus on what matters: your crown jewels and relationships

Cyber hackers continue to show an abundance of motivation. They need to be successful only once to see a payoff for their efforts. But your organization must be successful in managing an attack each and every time. Your success depends largely on knowing the value of your information assets and knowing the risks to those assets. Know your "crown jewels" and understand your friends' role in protecting them.

Crown jewels

As the level of sophistication in hacker goals and hacker tools continues to rise, your organization might continue to face the traditional budget pressures. You have no blank check to spend on security. You have to think strategically. You have to know and protect your information crown jewels. What is worth protecting? What investments can you make to protect those information assets?

Fending off an attack begins with knowing what you *need* to protect, not just what you *want* to protect. You need to understand what your crown jewels are and where they are located. Many hackers are looking aggressively for your crown jewels—your critical assets and sensitive data.

Identifying your crown jewels will help you prioritize security investments and the security requirements for third parties that might host your data off premises. As you begin to discover and identify your crown jewels—and as you begin to determine what investments you can make to protect them—resist the urge to prioritize them based solely on standard business continuity plans.

You might be overlooking the value of some of your information assets. For example, what you consider routine administrative systems can matter a great deal during a cyber-attack. If an e-mail server or authentication server gets hacked, your organization could be out of commission for longer than you can imagine—and possibly out of commission for good.

Remember that your crown jewels can reside virtually anywhere as your workers and partners turn to mobile and cloud-based technologies to access and share information to do business. As you seek to identify your crown jewels, think outside the walls of your organization.

Key points

- The level of sophistication in hacker goals and hacker tools continues to rise.
- Determining your crown jewels and the investments required to protect them will vary from industry to industry.
- Don't prioritize your crown jewels based solely on business-continuity plans. Consider risk.
- Remember that your crown jewels can reside virtually anywhere—in the cloud, on mobile devices, with partners.

Friends/relationships

Thinking outside the walls of your organization means thinking primarily about contractors, vendors, and suppliers—whether they're cloud providers, outsourcing partners, or other business allies.

Whether you are an IT manager or a business leader within your organization, you need to know who your organization is sharing information with and where your crown jewels reside—because the hackers do know. Attack patterns show that they're increasingly targeting third parties to get to their true target organization.

Addressing the threat means taking a risk-based approach to security. You'll need to know your risk exposure—which friends host or have access to your critical information and systems, and how vulnerable they are to cyber-attacks.

Don't rely too heavily on a vendor questionnaire to determine how at risk a partner is. That's not enough. Ask your partners and potential partners for security audit reports—and consider conducting site visits, based on criticality of assets being accessed or hosted by the third party.

Know also that your third-party business partners' technology and information-sharing patterns might change. Don't rely on initial security/risk assessments. Keep checking in with them. They might be turning increasingly to new technologies such as cloud computing and mobile applications without thinking about the how that could affect risk or policies for your organization. Partners won't necessarily assess what the loss of your data will mean for them, so it's up to your organization to do that. *You* need to make sure your partners are keeping your data as secure as possible—because if your third-party partner is hacked, the party you're now dealing can serve as the jumping-off point for a hacker .

Key points

- Know who your organization is sharing information with.
- Know which friends have access to your critical information and systems.
- Don't rely heavily on questionnaires. Ask your partners and potential partners for security audit reports.
- Keep checking in with partners to understand how their IT landscape is changing.

2 Proactively assess your cyber risk

To address cyber threats effectively, organizations should have a cyber threat intelligence (CTI) capability that will help them rapidly identify, detect, and respond to threats.

Cyber threat intelligence involves using technology, processes, and people to proactively acquire, analyze, and disseminate intelligence—internally and externally—as a way to improve security. The CTI approach emphasizes situational awareness and tactical/strategic responses that can help reduce the likelihood of harm or risk for your organization.

A CTI approach depends on an organization's ability to synthesize of external and internal intelligence in a timely manner to develop a constant "situational awareness" that will become part of the organization's overall security posture. CTI is critical to maintaining the confidentiality, integrity and availability of information assets.

In addition to a host of technology products and services that can help an organization develop its CTI capabilities, human interaction also comes into play. Participating in industry groups can help your organization become aware of security trends and tactics at peer organizations—and also offer you a venue for sharing your own experiences with your neighbors to help create a common picture and a heightened awareness on cybersecurity issues.

External intelligence

Get smart about where cyber-attacks are happening within your industry and what they look like. Seek new sources of information. Then share that knowledge within your industry and with partners—and especially with other organizations with which you exchange data for business purposes.

Internal intelligence

And don't forget to dive deeper within your own data to uncover useful intelligence. Maintaining a trail of data-access activity—a trail that you can follow and investigate—can help improve your overall security posture. Actively monitoring and analyzing your data trails is essential. Do you really know what's happening in your organization? Do you know what's happening with your data as it flows through mobile and cloud applications and as your partners handle it?

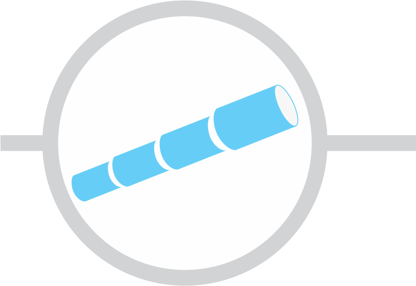
Many organizations keep activity logs merely for compliance purposes. But logs can offer powerful clues for detecting not-so-obvious threats to your business. Logs can help you identify patterns or incidents that suggest a more subtle intrusion or a potential data hole that needs to be plugged. Don't just review your log data and related data. Use it for insight. Doing so can help you detect a threat in a timely fashion. You might require new tools to develop an advanced detection capability.

More mature organizations are increasingly putting in place comprehensive security-analytics solutions to effectively manage large volumes of security data and hunt for suspicious patterns—to find that threatening needle in the haystack.

Key points

- Work toward a comprehensive plan for cyber threat intelligence.
- Be proactive. Seek new sources of information and new ways to interact with peers to identify trends and tactics.
- Monitor your data-access trails and data logs to gain insight and detect threats early Review log data to gain insight into potentially suspicious patterns or activities.

3 Focus on awareness to build a multilayered defense



Cyber adversaries, actors, and criminal organizations continue to employ increasingly sophisticated exploit techniques and methods, and they will continue to evolve their tactics. Some of these methods bypass traditional cyber defense systems as well as more sophisticated defense systems.

And cyber attackers are especially focused on an attack vector that exploits business users, employees, and partners—employing advanced threat techniques. Such techniques often are designed with espionage or financial gain in mind—or focused on other goals that can have a material business impact.

Faced with the growing complexity and impact of threats, organizations must focus on building a multilayered approach to combating cyber attacks. End-user vigilance, training, and awareness can help organizations build a "last line of defense" for many of these advanced threats.

Security awareness should be more than a compliance exercise. Your aim should be to change your organization's security culture and the behavior of employees. Building awareness is about building a culture.

The more people you have thinking about cybersecurity, the more vigilant your organization. To do that, continue to encourage workers beyond the IT staff to think about cybersecurity—to ponder not only the technical challenges but the business and process challenges too. Each set of participants needs to know what the organization expects of them, what's at risk, and what they need to be doing.

It's also important to make workers in your organization aware that cyber threats are not just an IT problem. They're a people problem—a business problem—and internal and external system users ultimately are accountable for overall security. Communicating that point might pose a challenge, especially if employees view new security measures as a hindrance or an inconvenience. So organization leaders should develop training/awareness programs and make a sincere effort to explain security challenges and rules in language that users can understand.

Moreover, they should ensure that the various components of leadership—IT leadership or other business leadership areas—are aware of the cybersecurity activities and messages for which they're responsible. And leadership must set a "tone at the top" when it comes to security awareness.

Workers also need to be made aware of specific threats and their potential consequences. For example, workers should be on guard for "spear-phishing" campaigns, in which a hacker leverages personal or customized information to target an individual user (via an e-mail message with bogus corporate links, for example) and then ultimately infiltrate or infect the larger organization. For example, a fake "internal revenue report" e-mail attachment sent to members of a sales team can harbor malware that could infect an organization's network.

Thinking about awareness in a more interactive, ongoing manner can help organizations engage workers and partners and make the threats seem more imminent and to make each employee's role seem more vital for securing the organization.

Key points

- Consider the elements and activities required to build a multilayered defense.
- Strive to neutralize structured cyber threats by disrupting their attack life cycle (i.e., employ a "kill chain" model).
- Make sure employees and partners know that security measures are instrumental for your *entire* organization.
- Explain security challenges and rules in language that users can understand.
- Think about awareness in a more interactive, ongoing manner to engage workers and partners and to make threats seem more concrete.

4 Fortify your organization

Even though you know what your organization’s critical assets are, that doesn’t make you secure. While the news is filled with accounts of cyber-attacks that target *unknown* system weaknesses, most attacks exploit *well-known* system weaknesses.

The issue is straightforward: known vulnerabilities—vulnerabilities that are known to hackers and known to the organizations they target. The ultimate solution also can be straightforward: a comprehensive patch-management program that focuses on crown jewels and critical assets.

Organizations should seek to move from a compliance-based approach to a risk-based approach. They should resist the urge to follow the easy route of performing ad-hoc patching and leaning too heavily on ”Tuesday patching,” in which they rely on a regular weekly patching update from a single major software vendor and just assume they’ve done a good job of patching their holes. When it comes to attacks, hackers are expanding their scope. Organizations should expand their scope, too.

Fix known weaknesses

Solving the “known vulnerability” problem involves simple due diligence. This due diligence will take time and can be tedious. And it should be undertaken using a risk-based approach, with IT departments working in coordination with other internal decision makers to help determine priorities based on your organization’s “crown jewels,” your constraints, and your existing controls. Work to understand what’s possible given your organization’s manpower and technical know-how.

Security by design

Software development also can pose a security risk. Security procedures often can be perceived as a hindrance or a factor that can delay the timely development of new systems. But development activities are ripe with opportunities to overlook security needs or to create new security holes. Organizations should strive to add security protocols and a security mindset to the development process.

Physical security still counts

And it’s not enough to address the software side of security. You also must work to spot physical security holes and weaknesses that could allow an unauthorized individual, a disgruntled worker, or an unwitting employee to leak or steal critical information. Addressing potential weaknesses in physical security and access rights sometimes can prove more challenging. Defining roles, responsibilities, and procedures for accessing data and for accessing physical areas within your organization can help move your organization in a more secure direction.

Key points

- Patch holes, focusing on critical holes as well as holes that might not seem critical but that are known.
- Resist the urge to lean too heavily on regular patches from a single major software provider.
- Work to spot physical security holes and weaknesses in data-access procedures.

5 Prepare for the inevitable

Most organizations have a security incident management process in place. But few have tested it. When (not *if*) your organization is attacked, how will you respond? How will the IT department react? How will the operational side of your organization—and the communication arm of your organization—react? How will they work together to understand the problem, remediate the problem, and let partners and customers know what's going on?

To prepare for the inevitable attack, your organization should be asking the following questions now:

- Who should be contacted during and after an incident?
- Which groups and individuals should be engaged?
- Which third parties will you need to notify or engage?
- Which customers or external users will you need to alert? What will you tell them? How will you tell it to them?
- And what about regulators and the role of privacy and legal groups in your organization? How will you engage them?
- And ultimately, how quickly can you contain a security breach and restore your organization to normal operation?

Having answers to the key questions and many more organization specific questions can help you bounce back quickly after an attack. But answering the questions is just part of the equation. Testing your answers is critical.

To do that, many organizations are carrying out cyber simulations to test their true cybersecurity preparedness and to determine the usefulness of existing crisis management and security incident management processes. Cyber simulations are interactive techniques that immerse participants in a simulated attack scenario to help organizations evaluate their response and preparedness. Traditional cyber threat preparedness assessments focus on evaluating technology controls and incident response plans.

Such simulations involve not only technology, but the people involved in responding to incidents. Organizations should include not just their IT staff when simulating cybersecurity incidents. They should involve their operational staff and upper-level business leadership in simulations, too.

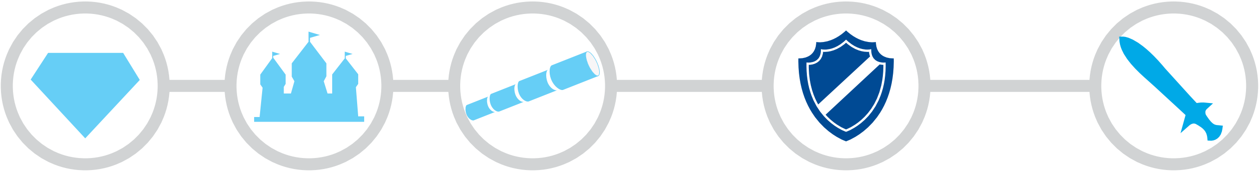
Key points

- Know how departments will work together during a cyber-attack.
- Know how you will engage regulators as well as observers such as privacy groups.
- Know how you will engage partners and customers.
- Simulate incident management, bringing in IT and other departments to test your preparedness.

Staying on your toes

Becoming a secure, vigilant, and resilient organization doesn't happen quickly. But it's something that *has* to happen if your organization intends to survive amid the emerging technology landscape and the evolving terrain of cyber threats. And becoming a secure, vigilant, resilient organization requires not only these five big, important steps; it requires constant assessment of how well you are taking those steps—constant assessment of whether you're taking the steps effectively, of whether those steps are taking you where you want to go.

Despite the challenges, improving cybersecurity doesn't have to be a grueling journey. Deloitte can help. We know cybersecurity. We have deep experience addressing issues in a variety of industries, from financial services and retail to the public sector and energy/resources. And we're up to date on the challenges that face organizations as they embrace cloud, mobile, social, and analytics technologies. From strategy to implementation, we stand ready to assist you with the steps you need to take to get on your way.



For more information, please contact:

Nick Galletto
Global Leader
Cyber Risk Services
ngalletto@deloitte.ca

Marc Mackinnon
Partner
Cyber Risk Services
mmackinnon@deloitte.ca

Amir Belkhelladi
Partner
Cyber Risk Services
abelkhelladi@deloitte.ca

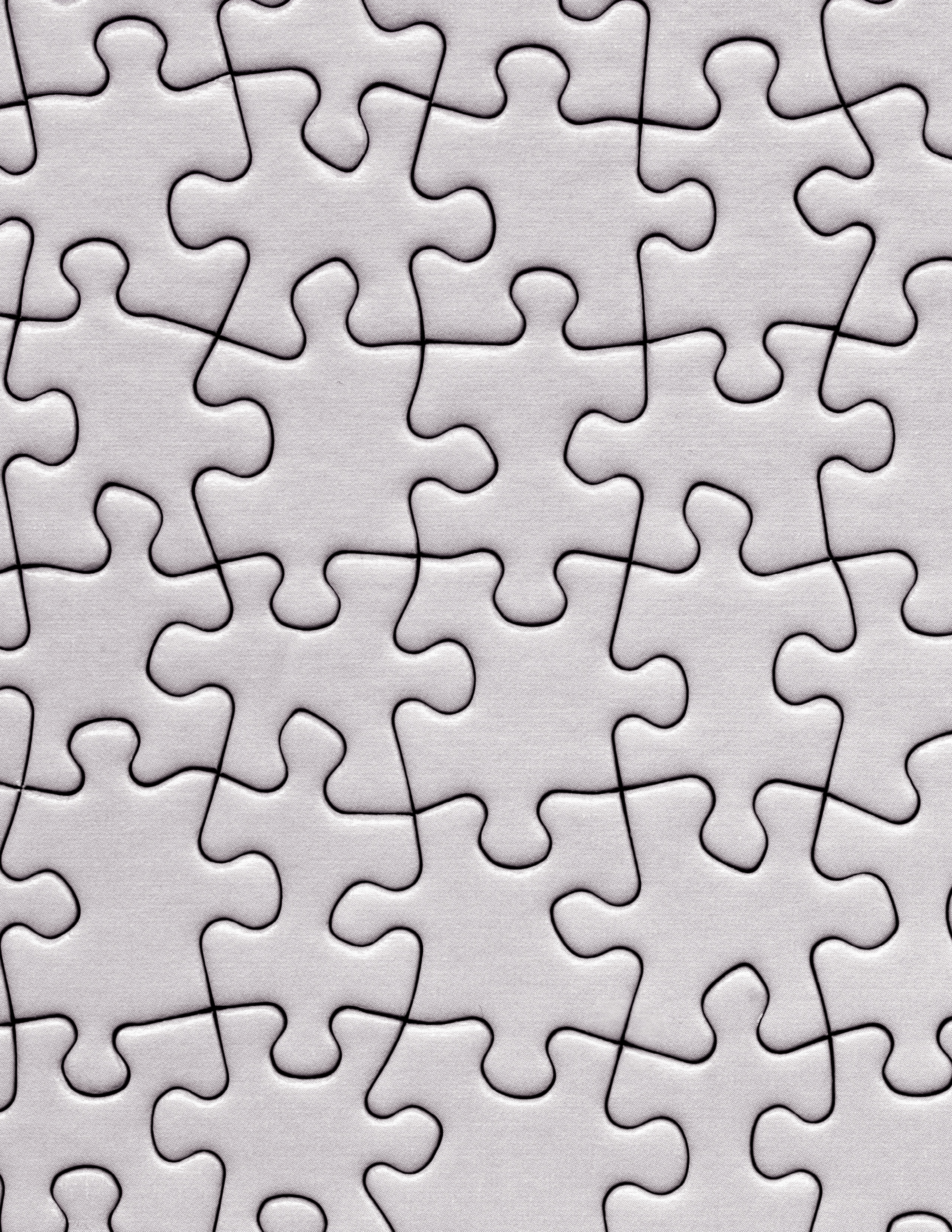
Rocco Galletto
Partner
Cyber Risk Services
rgalletto@deloitte.ca

Robert Masse
Partner
Cyber Risk Services
rmasse@deloitte.ca

Justin Fong
Partner
Cyber Risk Services
jfong@deloitte.ca

Dina Kamal
Partner
Cyber Risk Services
dkamal@deloitte.ca

[1] New Cisco Security Study Shows Canadian Businesses Not Prepared For Security Threats. Date accessed: March 16, 2015. http://newsroom.cisco.com/release/1559272/New-Cisco-Security-Study-Shows-Canadian-Businesses-Not-_2



www.deloitte.ca/cyber