IBM Security

The security immune system

An integrated approach to protecting your organization

Find out more

Why a security immune system **makes sense now**

We’ve heard it time and again. When it comes to cybersecurity threats, no one is immune.

No business, no government, no individual. In fact, the entire conversation has shifted from focusing on “if you’re attacked” to “how quickly you can respond.” And that’s not likely to change in the foreseeable future.

So let’s think about the concept of immunity for a minute. As humans, we have finely tuned—and highly adaptive—immune systems ready to help us fight off all kinds of attacks that would otherwise threaten to destroy us. Made up of cells, tissues and organs that work together to defend us against attacks by “foreign” invaders, a healthy immune system can distinguish between the body’s own cells and those that don’t belong. It’s an intelligent, organized and efficient system that can instantly recognize an invader and take action to either block its entry or destroy it.

But when we look at cybersecurity, the traditional defense strategy is to layer on another point-product tool or technology to an already fragmented and disjointed IT environment.

That’s why IBM has developed an integrated and intelligent security immune system.

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Information Risk and Protection

How it works: Four use cases tell the story

Why IBM

The number of personal data records stolen will reach **5 billion** in 2020[1]

The average total cost of a data breach in 2016 was **$3.62 million**[2]

Unfilled jobs in the cybersecurity workforce will reach **1.8 million** by 2022[3]

Click on any bar at left to navigate the IBM Security immune system story.

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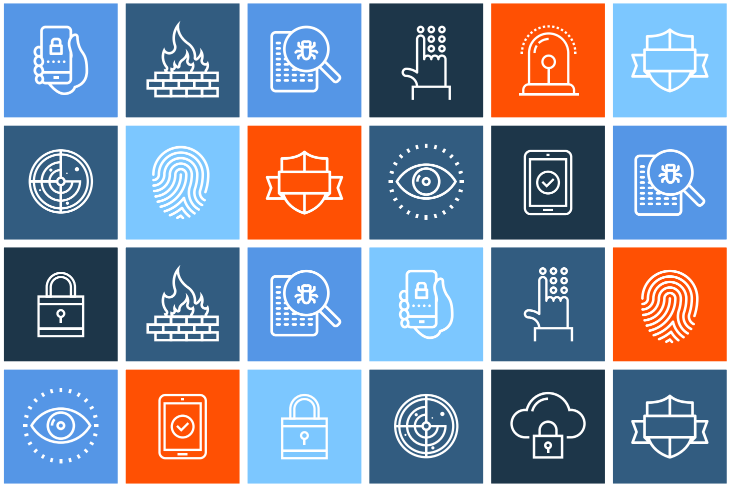
Today's expanded security arsenal of fragmented, disconnected point products has added complexity without significantly improving the overall security posture of the organization. The result? A bloated infrastructure that makes it more difficult to monitor the network as a whole, often leaving security teams to operate in the dark.

It's time to take a more holistic view of your security portfolio.

The IBM Security immune system is an integrated and holistic approach centered around a cognitive core of security orchestration and analytics which understands, reasons, and learns the many risk variables across the entire ecosystem of connected capabilities.

And once the IBM Security immune system is engaged with your entire ecosystem—allowing collaboration across third-party vendors, technology providers and business partners—it can provide you with the intelligence you need to understand existing threats and adapt to new ones.



Some organizations report they're using as many as 85 security products—from more than 40 vendors—at once. As each tool is added, the costs associated with installing, configuring, managing, upgrading and patching continue to grow. And with the skills gap plaguing the industry, it's easy to see how more threats are continuing to generate more vendors, more tools—and more headaches.

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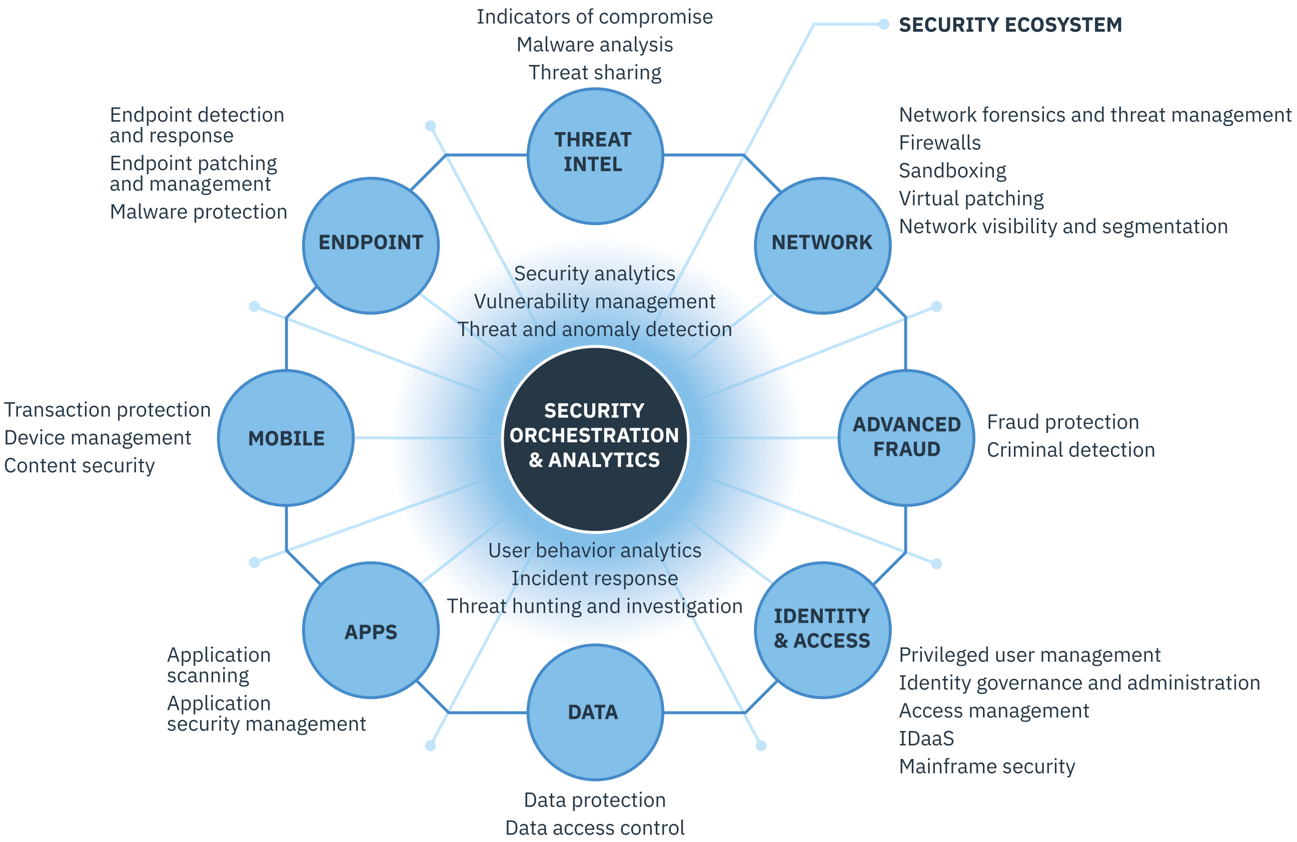

SECURITY ECOSYSTEM

SECURITY ORCHESTRATION & ANALYTICS

Security analytics
Vulnerability management
Threat and anomaly detection

User behavior analytics
Incident response
Threat hunting and investigation

THREAT INTEL
Indicators of compromise
Malware analysis
Threat sharing

NETWORK
Network forensics and threat management
Firewalls
Sandboxing
Virtual patching
Network visibility and segmentation

ADVANCED FRAUD
Fraud protection
Criminal detection

IDENTITY & ACCESS
Privileged user management
Identity governance and administration
Access management
IDaaS
Mainframe security

DATA
Data protection
Data access control

APPS
Application scanning
Application security management

MOBILE
Transaction protection
Device management
Content security

ENDPOINT
Endpoint detection and response
Endpoint patching and management
Malware protection

The IBM Security immune system looks at a security portfolio in an organized fashion—as an integrated framework of security capabilities that transmits and ingests vital security data to help gain visibility, understand and prioritize threats, and coordinate multiple layers of defense. At its core, the system uses security orchestration and analytics to automate policies and block threats—just as the human immune system can assess and identify a virus, for example, and trigger an immune response.

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Integrating security **planning, response and readiness**

The IBM Security immune system delivers a full range of security solutions and services designed to address your organization's specific needs across three key areas.

Security Transformation Services

Transform your security program

Security Operations and Response

Build a cognitive SOC

Information Risk and Protection

Take control of digital risk

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Security Transformation Services

Helping to simplify your view of the big picture

Security Transformation Services help you evolve your security strategy, creating a productive and mature security enterprise. We can help you:

- **Build a solid security strategy** that accelerates new IT trends, including BYOD, cloud, mobile, social and IoT
- **Access the right skills**—with experienced security advisors, responders, testers, analysts and engineers—available around the clock globally
- **Gain visibility and defend** against advanced threats with artificial intelligence that understands, reasons and learns to help analysts resolve incidents quickly
- **Reduce complexity, increase productivity** and consolidate fragmented solutions into an integrated solution utilizing analytics
- **Address compliance** with industry regulations, helping you set standards for your cybersecurity program based on risk assessments and controls

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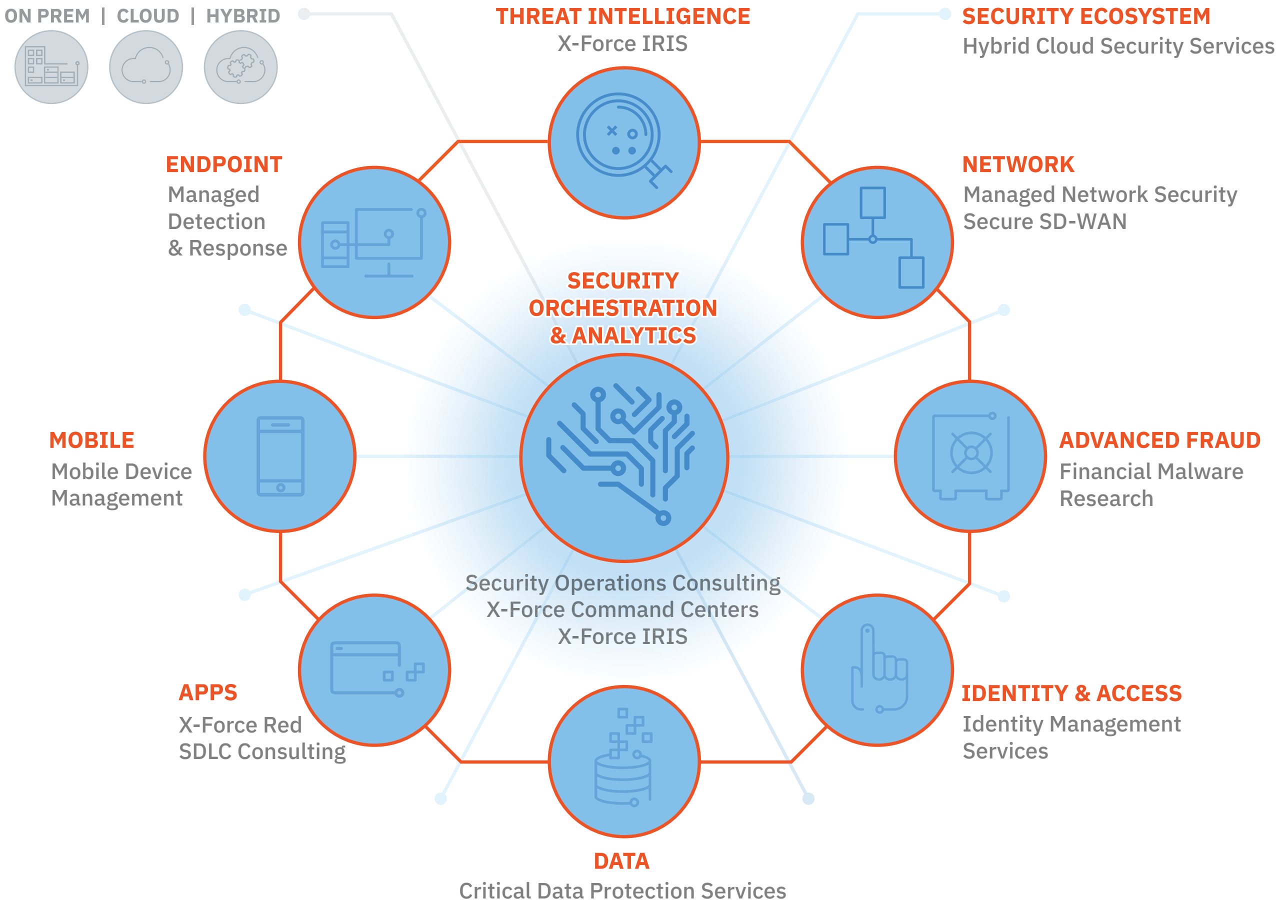

ON PREM | CLOUD | HYBRID

THREAT INTELLIGENCE
X-Force IRIS

SECURITY ECOSYSTEM
Hybrid Cloud Security Services

ENDPOINT
Managed Detection & Response

NETWORK
Managed Network Security
Secure SD-WAN

SECURITY ORCHESTRATION & ANALYTICS

MOBILE
Mobile Device Management

ADVANCED FRAUD
Financial Malware Research

Security Operations Consulting
X-Force Command Centers
X-Force IRIS

APPS
X-Force Red
SDLC Consulting

IDENTITY & ACCESS
Identity Management Services

DATA
Critical Data Protection Services

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IBM Security

Security Operations and Response

Orchestrate your defenses throughout the entire attack lifecycle

Criminals are relentless. Hoping you aren't a target is not enough to keep the bad guys out—they could already be inside your organization. And relying on perimeter solutions, periodic scans and compliance-driven methods may not keep you ahead of the threat.

The Security Operations and Response platform offers an integrated, end-to-end approach to building a cognitive security operations center (SOC) that can help enable you to:

- **Prevent, detect and respond** to threats in an intelligent, orchestrated and automated manner
- **Continuously identify and remediate** vulnerabilities
- **Take advantage** of IBM Watson® for Cyber Security to sense, discover and prioritize unknown threats
- **Use deep threat intelligence** provided by the IBM X-Force® Research team—and their massive threat databases—to hunt for indicators
- **Orchestrate and automate** incident response across people, processes and technology

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Security Operations and Response

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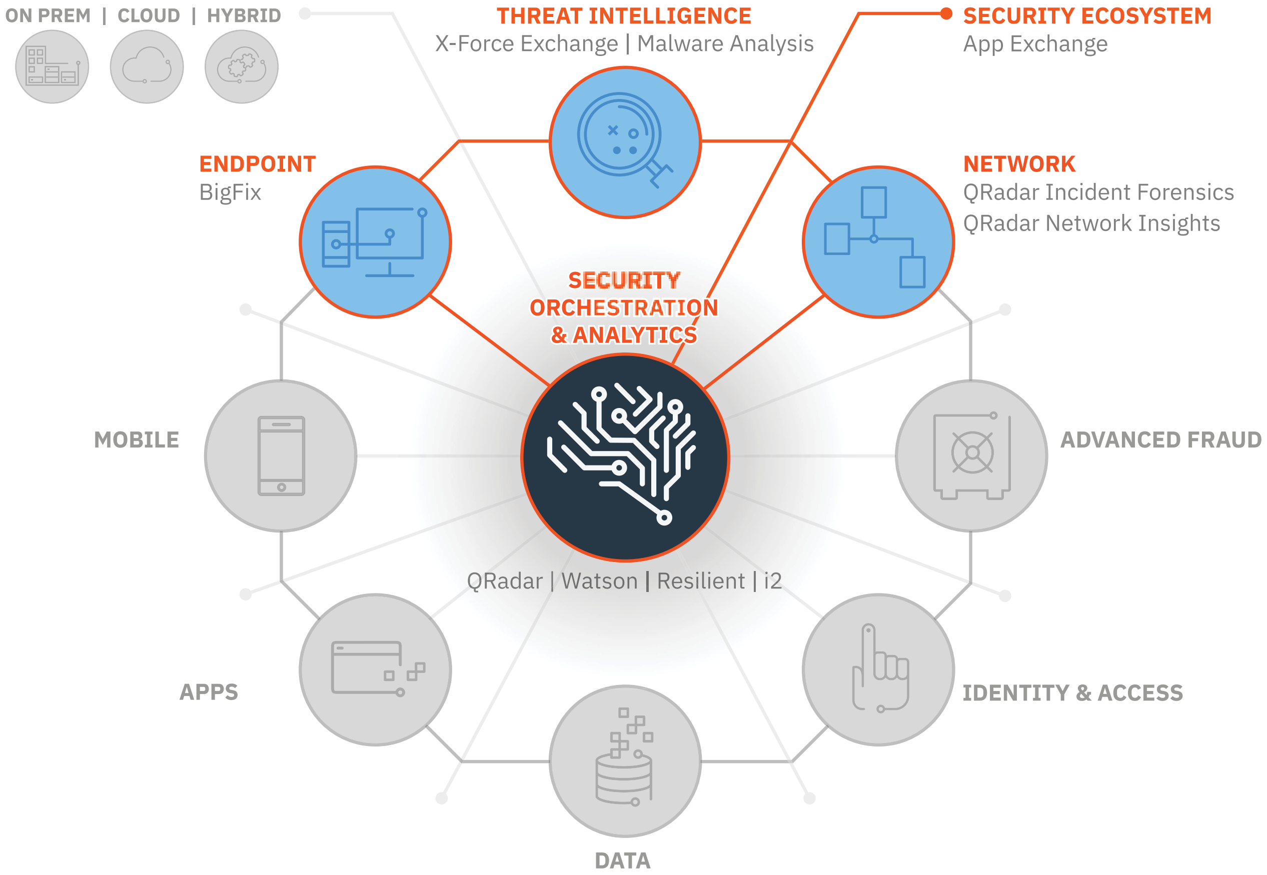

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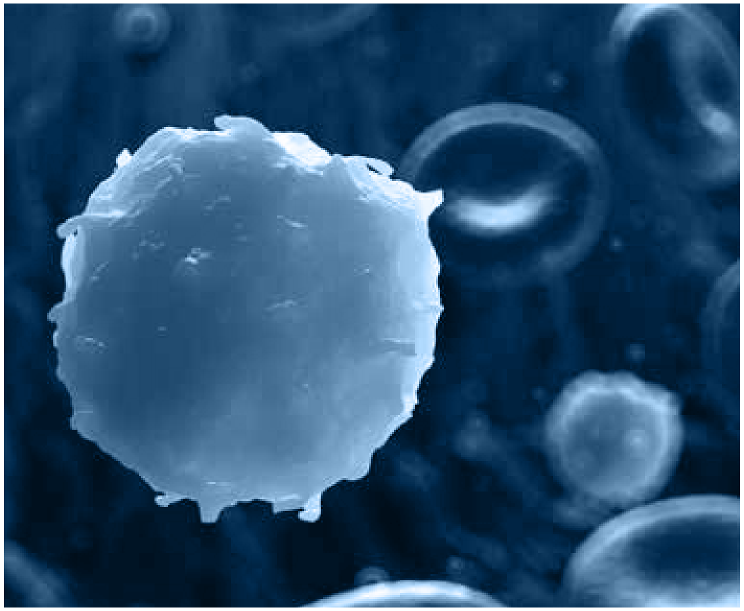
Information Risk and Protection

Keep your critical information protected while accelerating business

As more and more data is used in cloud and mobile innovations, more users, including partners and consumers, interact with the businesses. Fraudsters want to get at your crown jewels from the outside and malicious users can now have access to it from the inside. And the mounting regulatory changes continue to demand the ability to demonstrate control over this transformation.



This complexity creates security risks that can stall or even prevent business innovation and transformation. Information Risk and Protection solutions enable organizations to take control of risk throughout their digital transformation journey by providing capabilities that can help:

- **Streamline** the process of moving to the cloud and support hybrid environments, with security-as-a-service solutions designed to identify users, secure access, and protect data
- **Design applications** from scratch with a “secure by design” best practice methodology
- **Eliminate password and access hurdles** and reduce fraud through simple sign-on and risk-based authentication for mobile and web experiences
- **Enable secure collaboration** for endpoint and mobile users across their applications, content, and data
- **Protect data** in motion and at rest and address compliance requirements such as GDPR, PCI, SOX, and more

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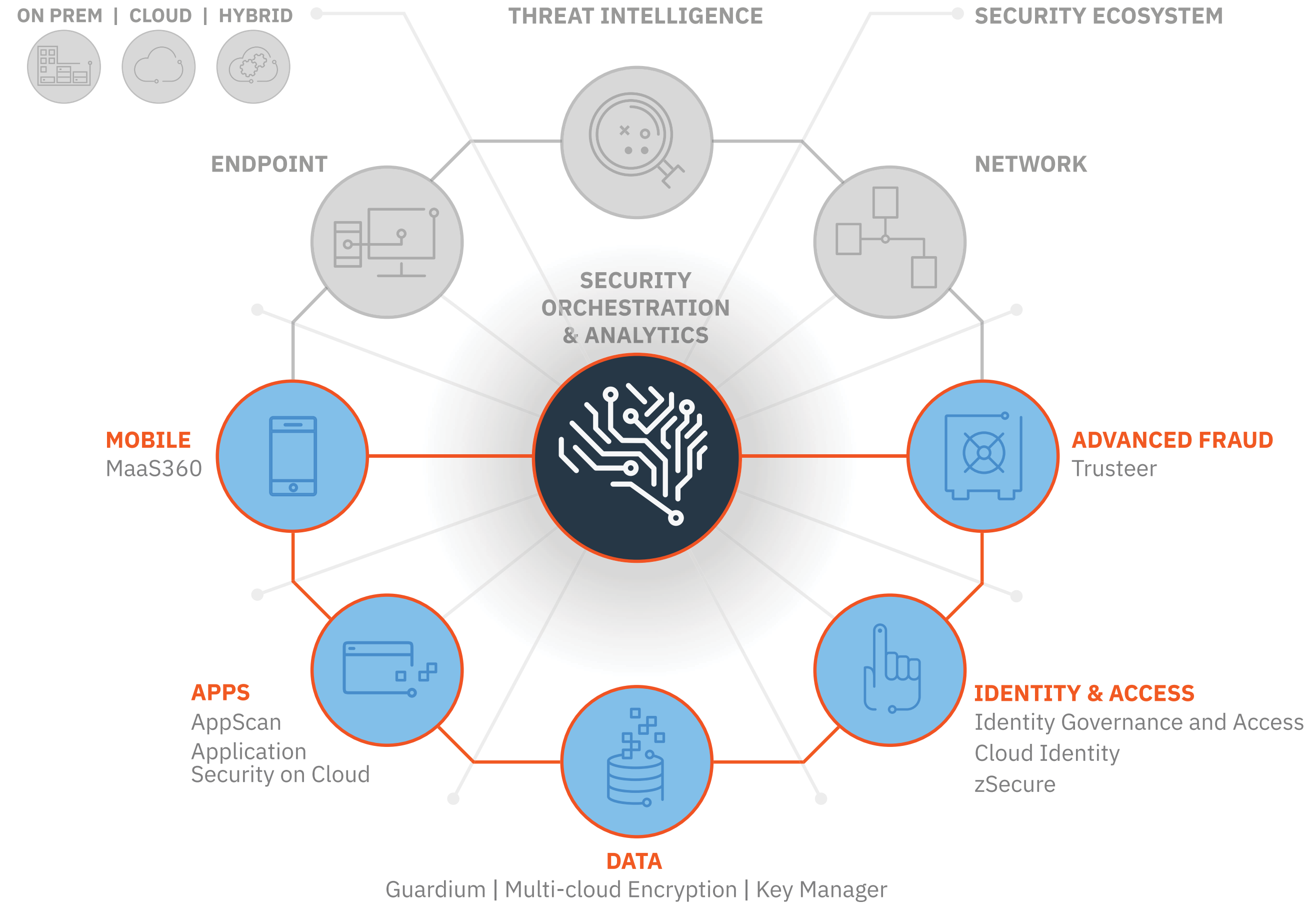

ON PREM | CLOUD | HYBRID

THREAT INTELLIGENCE

SECURITY ECOSYSTEM

ENDPOINT

NETWORK

SECURITY ORCHESTRATION & ANALYTICS

MOBILE
MaaS360

ADVANCED FRAUD
Trusteer

APPS
AppScan
Application Security on Cloud

IDENTITY & ACCESS
Identity Governance and Access
Cloud Identity
zSecure

DATA
Guardium | Multi-cloud Encryption | Key Manager

Next

How it works: Four use cases tell the story

Every organization faces its own security challenges. The following use cases offer a brief glimpse into how the IBM Security immune system would help four companies identify and respond to those challenges.

The ineffective incident response

The drive-by download

The insider threat

The potential for fraud

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A case in point:
Tne ineffective incident response

Cloud security is not a trend but an ever present and well established reality for Company A’s business structure. When an incident occurred inside Company A’s cloud environment, they struggled with obtaining the details behind the attack. And they lacked the wherewithal to launch an effective investigation so they could mitigate risks. Fearing that the incident could cause irreparable damage, Company A knew an effective incident response plan to quickly eradicate the threat was needed. This is where the elements of the Security Transformation Services domain can help.

See how the story unfolds...

1. **Preparation**
2. **Visibility**
3. **Containment**
4. **Recovery**
5. **See the big picture**

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1
2
Visibility
3
Containment
4
Recovery
5
See the big picture

Preparation

Cloud presents challenges in Company A's incident response. However, the security immune system will provide a strong baseline for formulating an incident response process using IBM X-Force IRIS (Incident Response and Intelligence Services) to help Company A before, during and after an incident occurs.

There are a number of disadvantages Company A faces that derive from operating exclusively in a reactive mode. Ultimately the results are longer times to get business back to normal and exponential costs associated with recovery efforts. X-Force IRIS Vision Retainer gives Company A access to highly skilled security consultants who can conduct preemptive incident preparation, data preservation, in-depth data analysis, and response and management functions. This solution provides continual threat monitoring in the event of an incident to facilitate greater visibility into threats and a more rapid remediation.

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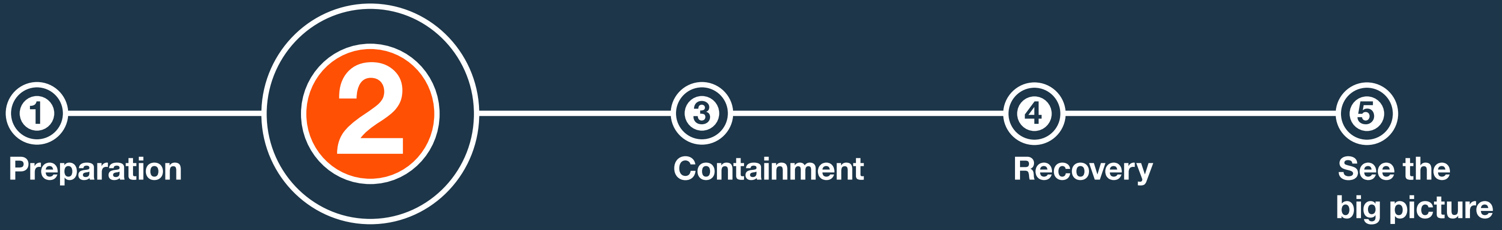

Visibility

Adaptive security for hybrid cloud from IBM provides Company A with near real-time visibility across their multi-cloud environment, helping to enforce security policy across shadow and IT-sanctioned workloads. The managed security service offers a single portal that can centralize and simplify Company A's view into their management and monitoring of security operations for all cloud and on-premises workloads. Not only does adaptive security for hybrid cloud provide visibility into Company A's hybrid cloud architecture but it can also assist with prioritization of roadmap actions needed to protect workloads, and implement an integrated threat management program to detect, prevent and respond to malicious activity. In addition, the fully managed security service monitors Company A's cloud environment, identifies anomalies and threats, and correlates those logs with global threat intelligence provided by its IBM QRadar SIEM solution.

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Containment

Once an incident is discovered, Managed detection and response from IBM helps keep Company A safe by enabling proactive threat hunting. Company A gains the visibility it needs to detect, isolate and respond to security incidents around the clock and across the extended enterprise. This fully managed service detects and responds to threats with root-cause and kill-chain visibility to deliver more effective security. Using IBM managed threat hunting services can help Company A reduce detection and response time so they can get back up and running quickly.

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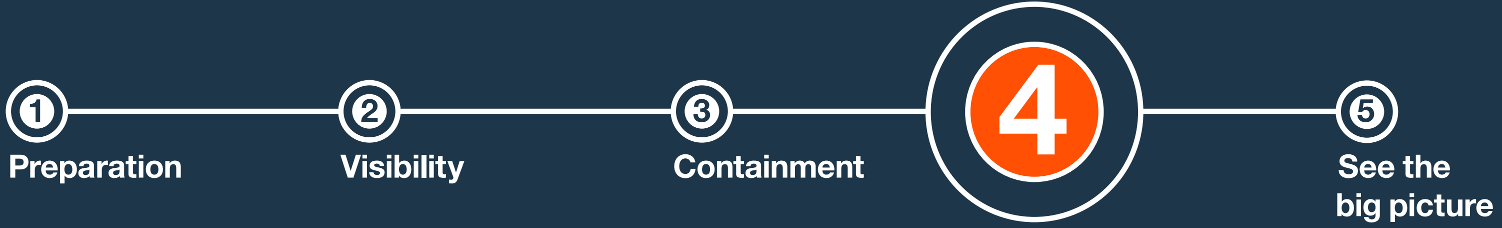

1 Preparation

2 Visibility

3 Containment

4

5 See the big picture

Recovery

Considering that an incident could quickly turn from a mere mishap to a dire business disruption, it’s vital for Company A to implement and regularly revisit an incident recovery plan. With IBM X-Force IRIS, Company A will have new peace of mind. Knowing how they will respond to an incident in advance will put them at a greater advantage to recover and it will help them uncover gaps in their security procedures.

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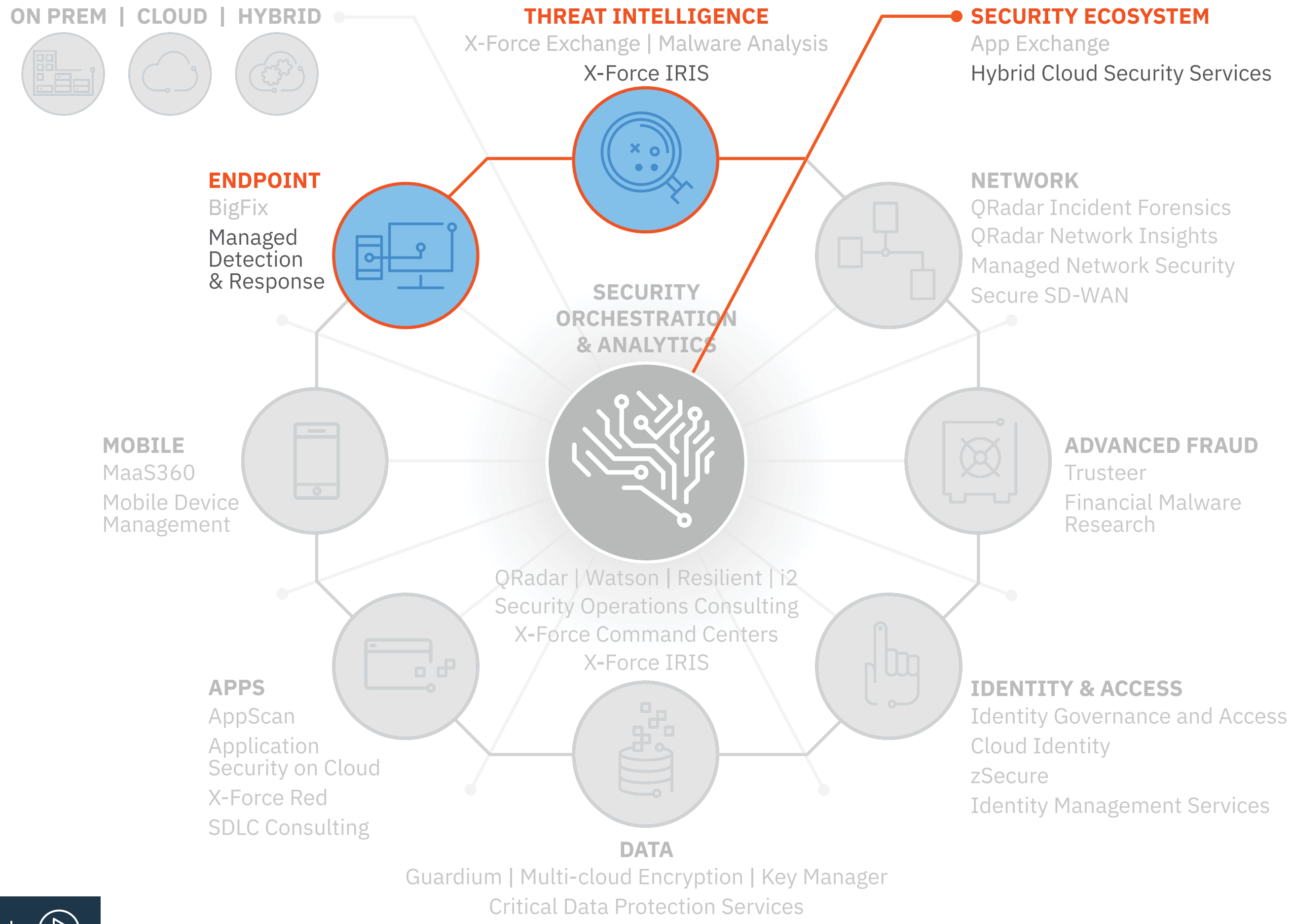

ON PREM | CLOUD | HYBRID

THREAT INTELLIGENCE
X-Force Exchange | Malware Analysis
X-Force IRIS

SECURITY ECOSYSTEM
App Exchange
Hybrid Cloud Security Services

ENDPOINT
BigFix
Managed Detection & Response

NETWORK
QRadar Incident Forensics
QRadar Network Insights
Managed Network Security
Secure SD-WAN

SECURITY ORCHESTRATION & ANALYTICS
QRadar | Watson | Resilient | i2
Security Operations Consulting
X-Force Command Centers
X-Force IRIS

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MaaS360
Mobile Device Management

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A case in point:
The drive-by download

There are countless ways in which determined attackers might go about getting into your systems without your knowledge. It happens all the time. Just check today's headlines for details on the latest high-profile break-in or data breach. Here's an example of how one such attack might be played out—and how several Security Operations and Response solutions can help disrupt the attack chain in near real time.

Here's how it all begins...

1. **The break-in**
2. **The connection**
3. **The expansion**
4. **The details in the data**
5. **The cutoff**
6. **See the big picture**

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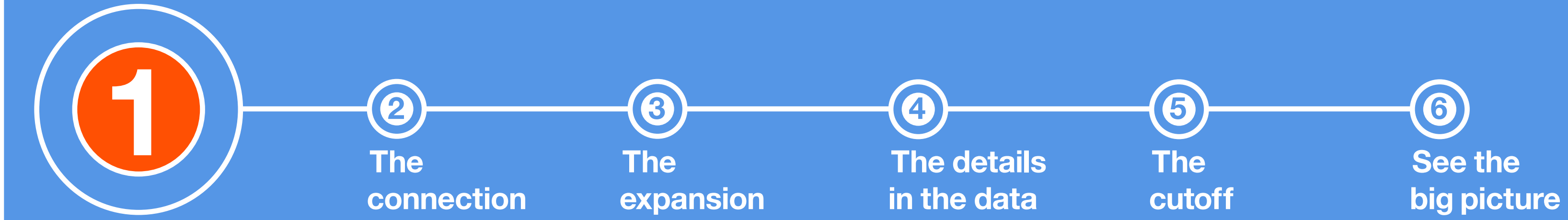

1

2 The connection

3 The expansion

4 The details in the data

5 The cutoff

6 See the big picture

The break-in

One of Company B's account executives is in a taxi, on his way to the airport for a trip to a customer site. Stuck in traffic, he pulls out his laptop, checks the company's intranet for some project details and sends out a few emails. What he doesn't know is that he triggered an attack via drive-by download. And because he's almost always on the road, he hasn't had much contact with the company's IT security team. So his laptop may not have been updated with the latest patches.

IBM BigFix® would allow Company B's IT security team to discover unmanaged endpoints (such as this employee's laptop) and get near real-time visibility into its endpoints to help identify vulnerabilities and those endpoints that are noncompliant.

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The connection

As it turns out, Company B's account executive had indeed missed getting the latest patches installed on his laptop. By the time he reaches the airport, the download has already latched onto the company's network and infects its internal system as part of a botnet.

With IBM QRadar® Network Insights, Company B would be able to gain visibility into the network traffic, automatically analyze suspicious files with IBM X-Force Malware Analysis on Cloud and actively block communication with the botnet's command and control server, based on intelligence provided by IBM X-Force Exchange. It can also effectively block zero-day exploit traffic and then send those traffic flows to IBM QRadar Security Information and Event Management (SIEM) for anomaly detection.

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The expansion

Without those safeguards in place, however, Company B unwittingly allows the attack to continue, targeting internal email sent to high-profile employees.

At this point, QRadar SIEM could still help halt the attack by correlating network traffic flows and security events from other security controls — and external intelligence on active botnets from IBM X-Force Exchange — into a list of priority offenses.

Powered by IBM Watson® for Cyber Security, IBM QRadar Advisor with Watson™ would help analysts evaluate that list in minutes rather than hours and propose options for actions to take.

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The details in the data

The attackers soon come within striking distance, gaining the authorization needed to access Company B's resources. QRadar Incident Forensics would now be able to reconstruct abnormal user and database activity from the associated network packet data. This would allow investigators to discover less obvious data connections and previously hidden relationships across multiple IDs.

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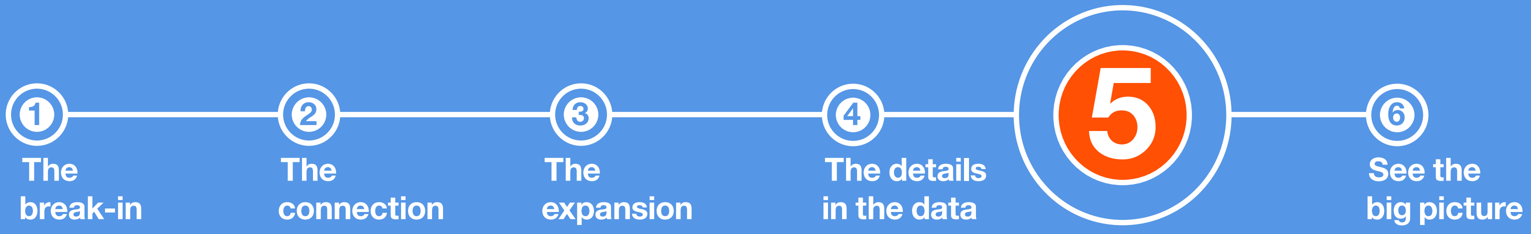

The cutoff

If the attackers manage to reach the point of siphoning out Company B's data, the IBM Resilient® Incident Response Platform™ could help the company's security team quickly analyze, respond, resolve and mitigate the incident. So they could take action to prevent or mitigate the damage inflicted by the attack.

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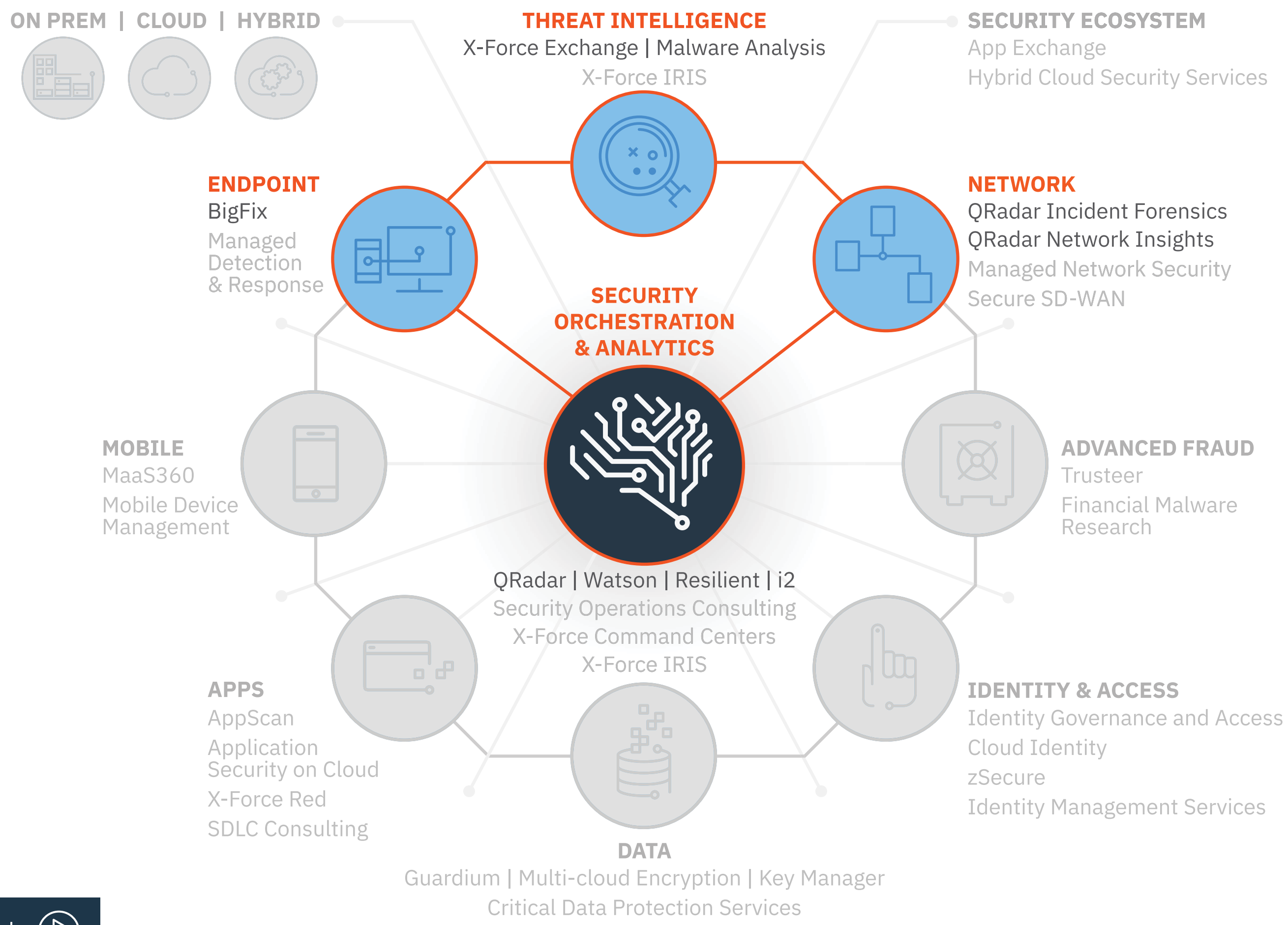

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A case in point:
The insider threat

Company C is aware that in 2015, 60 percent of attacks were carried out by insiders, either ones with malicious intent or inadvertent actors.[4] In other words, those attacks were instigated or initiated by people you would likely trust with access to your company's assets—including hard copy documents, disks, electronic files and laptops. Insiders could be employees of the company, or business partners, clients or even maintenance contractors. Here's an example of how Information Risk and Protection solutions help thwart insider threats.

Follow the process...

1. **Privileged identity management**
2. **Activity monitoring**
3. **Security intelligence and analytics**
4. **Identity governance**
5. **See the big picture**

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3 Security intelligence and analytics

4 Identity governance

5 See the big picture

Privileged identity management

With multiple locations in both urban and suburban settings, Company C employs a large number of individuals—including part-time hourly workers and several levels of management personnel. In addition, there are often teams of contractors brought in to work on special projects. The one thing they all have in common? A need for ongoing access to the company's systems and data. That's why the company uses IBM Security Privileged Identity Manager to help prevent advanced insider threats. It provides a centralized approach to managing access to privileged accounts, allowing users to "check out" these accounts when they need access to sensitive systems. In addition, the company relies on IBM Security Guardium® to cross-reference that information as it audits user access to data that's either at rest or in motion.

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A case in point:
The insider threat

Company C is aware that in 2015, 60 percent of attacks were carried out by insiders, either ones with malicious intent or inadvertent actors.[4] In other words, those attacks were instigated or initiated by people you would likely trust with access to your company's assets—including hard copy documents, disks, electronic files and laptops. Insiders could be employees of the company, or business partners, clients or even maintenance contractors. Here's an example of how Information Risk and Protection solutions help thwart insider threats.

1 **Privileged identity management**

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4 **Identity governance**

5 **See the big picture**

Activity monitoring

While monitoring and auditing privileged user access, Guardium can also identify abnormal or suspicious behavior and block illicit data and file access with near-real-time response. One day the system observes that several large files have been downloaded onto a thumb drive by one of Company C's part-time employees. Because the system recognizes that action as unusual activity—given the employee's responsibilities—it issues an alert flagging that behavior. Or it could deny access to the data in question through actions such as blocking, masking, or quarantining. Company C might also take advantage of IBM QRadar User Behavior Analytics to gain early visibility into related insider threats by analyzing other employees' usage patterns to determine if their credentials or systems have been compromised. It can identify users by name, add suspects to a watch list or drill down into underlying log and flow data. What's more, Guardium can share any illicit activity it finds to help QRadar User Behavior Analytics fine-tune its analytics, and then go on to share any anomalous activity it finds with Guardium.

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Security intelligence and analytics

Taking matters a step further, QRadar SIEM can help Company C pull together a clearer picture of potential problems by using analytics to correlate Privileged Identity Manager credentials with Guardium activities—to detect anomalies and trigger alerts. And IBM MaaS360® with Watson lets the company manage and safeguard its mobile devices, applications and content—while maintaining data security and personal privacy.

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Identity governance

IBM Security Identity Governance and Intelligence lets Company C's IT managers and auditors govern insider access and support regulatory compliance across the organization. It helps the company mitigate access risks and access policy violations by combining intelligence-driven, business-driven identity governance with end-to-end user lifecycle management. What's more, it checks for segregation of duties violations and runs access certification campaigns to help ensure the validity of privileged access rights.

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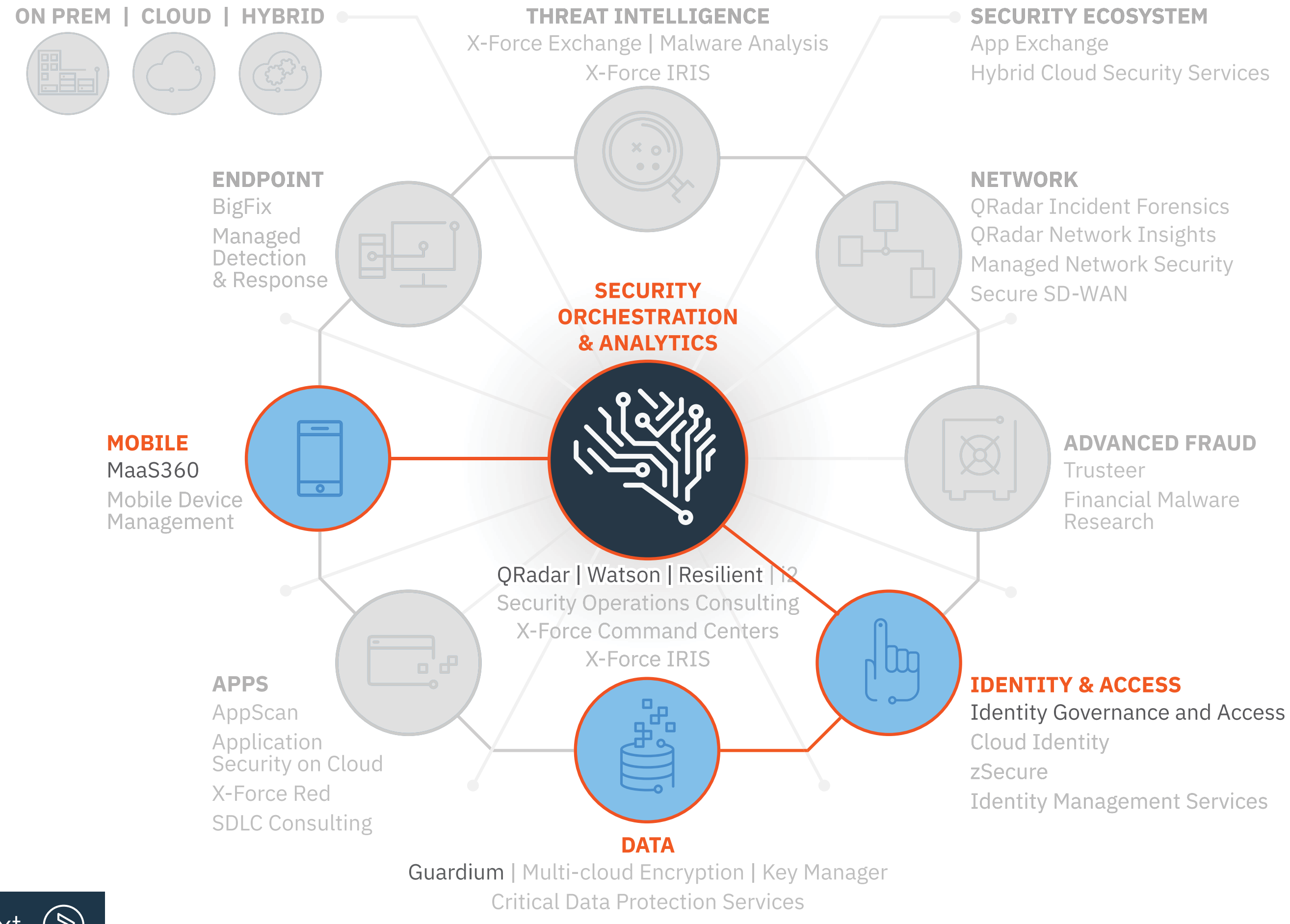
The insider threat

Here's how the IBM Security immune system would call upon specific solutions to address the issues raised in the case of the insider threat.



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X-Force IRIS

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A case in point:
The potential for fraud

Most companies would find it difficult to discuss IT security without talking about fraud. And that's especially true for financial services organizations. Company D is engaged in the consumer side of the financial services business, where it's important to recognize that some of the very conveniences that banks now routinely offer customers—including automated teller machines, credit cards and mobile banking apps—have introduced a level of accessibility that goes a long way toward making the financial system highly vulnerable to cyber attacks. But Information Risk and Protection solutions can help significantly reduce the risk of fraud—without complicating the user experience.

Learn what happens behind the scenes...

1 **Logging in**

2 **Protecting customers from fraud**

3 **Exercising necessary caution**

4 **See the big picture**

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2 Protecting customers from fraud

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Logging in

Laura M. is a Company D customer who wants to move money from one of her accounts to another via mobile phone. It takes just a few seconds for her to log in, using her online ID and security code. But in those few seconds, IBM Security Access Manager (ISAM) is validating Laura's password, determining her location, making note of the date and time, and identifying the IP address for the device she's using. Doing so helps Company D block fraudulent and high-risk transactions by analyzing user information and correlating user behavior and device attributes in real time—so it can determine whether Laura is who she says she is.

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① Logging in

2

③ Exercising necessary caution

④ See the big picture

Protecting customers from fraud

Next, IBM Trusteer® solutions help figure out whether Laura is a true customer or a fraudster—by determining whether the device she's using is valid, analyzing her behavior and helping to verify that neither her credentials nor her phone have been compromised. Trusteer also notes that Laura isn't just checking her account balance, but wants to transfer funds from one account to another. If it finds any evidence to suspect that it's dealing with a fraudster, it can restrict functionality based on bank policies, without alerting him or her that they've been detected. All this happens behind the scenes without giving Laura any reason to know or care about what's going on.

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① **Logging in**

② **Protecting customers from fraud**

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④ **See the big picture**

Exercising necessary caution

Of course there are certain circumstances under which Laura's actions might be subject to additional scrutiny to help protect both the bank and herself. For example, ISAM could move to enforce additional rules, asking Laura to perform a second authentication step (such as getting a second password) if she wanted to transfer over $10,000. And if she wanted to transfer millions of dollars, even multi-step authentication would likely be insufficient. She would instead be told to visit the bank in person.

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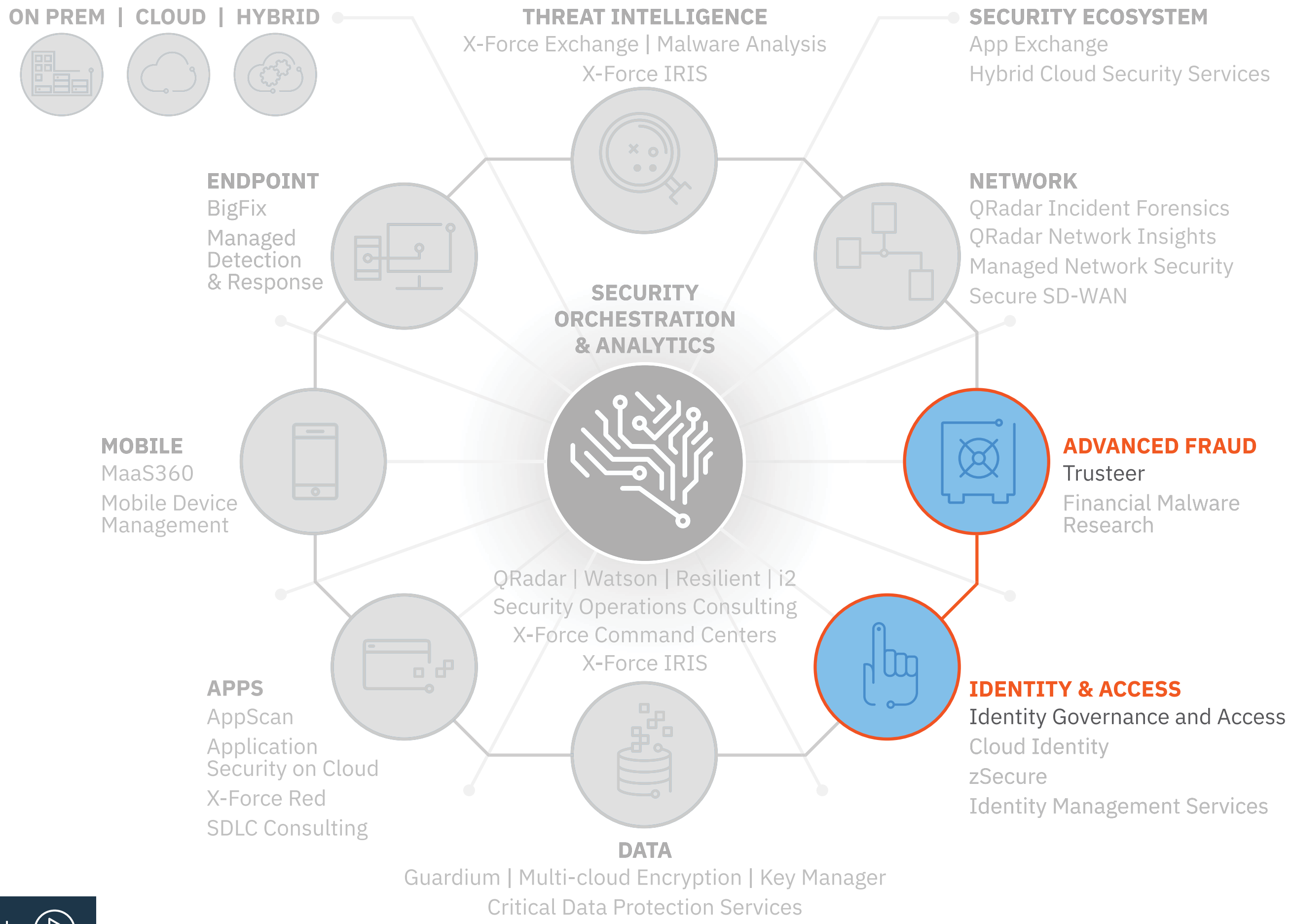

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Today's threats continue to rise in numbers and scale, as sophisticated attackers break through conventional safeguards every day.

The demand for leaked data is trending toward higher-value records containing personally identifiable information and other highly sensitive data, with less emphasis on the emails, passwords and even credit card data that were the targets of years past.[5]

And hardly a week goes by when the media isn't reporting that yet another prominent organization has fallen victim to a data breach, costing many millions of dollars. In fact, the average cost of a data breach is now $3.62 million.[6]

A piecemeal approach to security simply will not work. It's time to move beyond methods that assemble defenses for specific needs but lack the integration to extend security across enterprise assets and vulnerabilities. It's time for a comprehensive, integrated security immune system that delivers leading technology, best practices and flexibility. To protect your valuable resources, you need a system that relies on today's intelligence, not yesterday's narrow definition of known threats.

When you partner with IBM, you gain access to a security team of more than 8,000 people supporting more than 12,000 customers in 133 countries. As a proven leader in enterprise security, we hold more than 3,500 security patents. And by combining the security immune system with advanced cognitive computing, we let organizations like yours continue to innovate while reducing risk. So you can continue to grow your business—while securing your most critical data and processes.

For more information

To learn more about the IBM Security portfolio of solutions, please contact your IBM representative or IBM Business Partner, or visit: **ibm.com**/security

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Appendix

Click on the links below for more information on the following IBM products and services mentioned in this brochure:

- IBM X-Force IRIS (Incident Response and Intelligence Services)
- IBM X-Force IRIS Vision Retainer
- Adaptive security for hybrid cloud
- Managed detection and response
- IBM BigFix
- IBM QRadar Network Insights
- IBM QRadar Security Information and Event Management
- IBM X-Force Exchange
- IBM X-Force Malware Analysis on Cloud
- IBM QRadar Advisor with Watson
- IBM i2 Enterprise Insight Analysis
- IBM QRadar Incident Forensics
- IBM Resilient Incident Response Platform
- IBM Security Privileged Identity Manager
- IBM Security Guardium
- IBM QRadar User Behavior Analytics
- IBM MaaS360 with Watson
- IBM Security Identity Governance and Intelligence
- IBM Security Access Manager (ISAM)
- IBM Trusteer Solutions
- IBM Application Security Solutions
- IBM Security App Exchange

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Statement of Good Security Practices: IT system security involves protecting systems and information through prevention, detection and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, misappropriated or misused or can result in damage to or misuse of your systems, including for use in attacks on others. No IT system or product should be considered completely secure and no single product, service or security measure can be completely effective in preventing improper use or access. IBM systems, products and services are designed to be part of a lawful, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products or services to be most effective. IBM DOES NOT WARRANT THAT ANY SYSTEMS, PRODUCTS OR SERVICES ARE IMMUNE FROM, OR WILL MAKE YOUR ENTERPRISE IMMUNE FROM, THE MALICIOUS OR ILLEGAL CONDUCT OF ANY PARTY.

[1] Juniper Research press release, Cybercrime to cost global business over $8 trillion in the next 5 years, May 30, 2017.

[2] Ponemon Institute, 2017 Cost of Data Breach: Global Overview, June 2017.

[3] Frost & Sullivan, "Center for Cyber Safety and Education 2017 Global Information Security Workforce Study," 2017.

[4] Reviewing IBM a year of serious data breaches, major attacks and new vulnerabilities, April 2016.

[5] IBM X-Force Threat Intelligence Report – 2016.

[6] Ponemon Institute, 2017 Cost of Data Breach: Global Overview, June 2017.

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