Few could have predicted the degree of success eBay, Inc. has achieved. Originating in the home of co-founder Pierre Omidyar in 1995 as an online garage sale, eBay has over 13,000 employees, 2007 forecasted revenue in excess of $7 billion, and millions of members who buy and sell in 38 different marketplaces globally. When the data is tallied, eBay is one of the most successful, if not the most successful, Internet companies in the world.

Even fewer could have predicted the growth of cybercrime and its ascendance as a core business driver for eBay today. Just as the number of users and the number of goods traded on eBay are in the millions—there are over 100 million listings at any given point in time and approximately $14.5 billion in goods is traded quarterly by more than 240 million members—the number of security attacks run into the millions annually.
Enter Dave Cullinane, the chief information security officer of eBay Marketplaces and a modern-day IT security seer. Not unlike the augurs of ancient Rome who interpreted auspices as a means for predicting the outcome of all major undertakings, Cullinane and his team at eBay interpret the “auspices” of the security landscape in order to predict the types and nature of future Internet threats. This predictive security model helps ensure that eBay stays several steps in front of the cyber criminals, making them play from a position of weakness—a scenario of endless catch up.

“Livelihood-critical” security
The enormity of the security threat eBay faces is almost mind-boggling. “We see over four million security attacks annually, not run-of-the-mill but sophisticated attempts to break in,” Cullinane says. “We’ve spent a lot of time analyzing what’s happening in our own world of Trust and Safety, an area on the eBay Web site for keeping the Marketplaces safe. And we have some pretty phenomenal security protections in place. Indeed, of the millions of attacks we receive each year, only a couple make it past the first perimeter.”
There is malicious code that gets written every day, and it is important that we sustain our predictive security approach.

Security in the 38 eBay marketplaces is a “livelihood-critical” activity for not only eBay but many of its members. Cullinane explains: “Of our 240 million users, over 1.3 million are what we call ‘primary sellers’ and ‘secondary sellers’, individuals and businesses that make all, or significant pieces of, their living off of eBay. As a result, maintaining the integrity of trading and communications in the eBay community is critical to these ‘power’ users.”

“Tony Soprano” factor
Cullinane, who is widely recognized as a technology thought leader, has more than 30 years of experience in IT security, serves on the Editorial Advisory Boards for CSO Magazine and SC Magazine, and is a former International President of the Information Systems Security Association. Yet, because of an ever-changing security landscape and the accelerating severity and frequency of attacks, he must draw upon and continually expand the breadth of his experience and expertise.

On that note, Cullinane recalls a humorous comment he made about two years ago that Tony Soprano and his crime family would soon venture into cybercrime. While his remark was made in jest, he was proven to be prophetic. “There are clear indications that organized crime is behind many of the more serious attacks that are now appearing,” Cullinane says. “They [organized crime] are actually funding research on how to break into systems, perpetuate fraud, and much more. This involvement is certainly contributing to the sophistication of the threats we’ve seen over the past year or two.”

Combating cybercrime
Close to the end of his tenure as CISO at Washington Mutual, Cullinane noted that man-in-the-middle attacks began to appear on the horizon. These are instances where an attacker is able to read, insert, and modify at will messages between two parties without either party knowing the link between them has been compromised. “We predicted the advent of man-in-the-middle attacks based on some initial attempts to con customers into giving up their credentials,” Cullinane remembers. “However, we didn’t expect man-in-the-middle attacks to show up until sometime in late 2007. But then, in August 2006, we saw actual attempts happening. It’s one of the indications that things are starting to come much faster than we really expect.”

Phishing is also becoming a greater industry-wide problem to combat, according to Cullinane. “Phishing has gotten much more sophisticated in just the past couple years,” he explains. “There is a significant amount of social engineering going into them. As a result, we are proactively working to educate our members on what technology tools they should deploy as well as what things they need to look for when receiving and opening email from unknown sources. It is critical that our members utilize robust security software with antivirus and personal firewalls.” It is on this front that Cullinane and his team are working proactively to educate customers. Specifically, they are putting a major effort into encouraging buyers and sellers to visit their
As Cullinane builds upon his predictive security model, he is leveraging Symantec Consulting Services, along with consulting expertise from other industry-leading online security companies, for help in conducting strategic assessments of his IT infrastructure and security processes. Symantec Consulting Services has delivered three engagements over the past four months that Cullinane sees as important. First, as part of the process of complying with payment card industry (PCI) requirements, Cullinane and his team engaged Symantec consultants for a PCI Compliance Assurance Service. “The PCI Compliance Assurance Service has been very helpful in keeping us compliant with PCI requirements,” Cullinane says. “PCI compliance is one of the areas where eBay is seen as a thought leader. eBay is actually way ahead of most companies in terms of what we do with PCI compliance.”

The second area where Symantec Consulting Services has played an important role is the Security Blueprint Service. Symantec consultants worked with Cullinane involving asset management tracking, Cullinane recently acquired and deployed Altiris Asset Management Solutions from Symantec across the IT computing environment at eBay.

Assembling the right security technologies
Cullinane and his team rely on numerous resources from leading research universities and various security vendors to keep the eBay marketplaces and corporate systems, which also fall under Cullinane’s charge, secure. In particular, eBay’s multi-layered security infrastructure consists of various technology solutions, including Symantec AntiVirus Enterprise Edition.

For antispam, antivirus, and content filtering across the eBay corporate infrastructure, Cullinane and his team use Symantec Brightmail AntiSpam software and Symantec Mail Security appliances. Symantec AntiVirus, Brightmail AntiSpam, and Mail Security appliances are part of a two-year Symantec Elite Program, an enterprise licensing agreement that provides eBay with flexibility in deploying licenses of Symantec products. In addition to these solutions, in order to meet SOX regulations online eBay Security Center, which contains information on buying, selling, and paying, as well as valuable third-party government and law-enforcement resources.

Bots are another security threat Cullinane sees increasingly, both in number and sophistication. Bots allow hackers to take control of many computers at a time and turn them into “zombie” computers, operating as part of a powerful “botnet” to spread viruses, generate spam, and commit other types of online crime and fraud. “There are good and bad bots,” Cullinane says. “We are obviously focused on the ‘bad’ bots. Bots are a serious issue, and we continue to build systems that will allow us to combat the armies of ‘bad’ bots that are being assembled.”

Security Tips for eBay Marketplace Sellers and Buyers

Dave Cullinane, the CISO of eBay Marketplaces, explains that security is a two-way street for sellers and buyers. During our interview with Dave, we asked him to list his top security suggestions to eBay sellers and buyers and ways they can protect themselves from identify theft, viruses, spyware, bots, malware, phishing attacks, and other cyber threats.

1. Antivirus and Antispyware: Implement a comprehensive antivirus and antispyware software solution and keep your signatures up-to-date.
2. Personal Firewall: Install a personal firewall and don’t forget to configure it properly—a mistake some users make. The personal firewall not only keeps bad things out of your computing system but prevents your computing system from sending messages that you don’t want to send.
3. Bots: Make sure your antivirus and antispyware solution includes antibot protection and is set up for automatic updates and patching. It is also important to increase your security settings and to limit user rights.
4. Phishing: Be wary of Web sites, email messages, and instant messages that ask for sensitive information such as bank and credit card accounts, something no reputable bank or financial institution would request. Use antivirus and antispyware software that includes antiphishing protection and get an eBay Toolbar with Account Guard.
5. Spam: Find an antispam software solution, preferably one that is integrated with your antivirus and antispyware software. This will increase your productivity and help keep out email with malicious code, viruses, and phishing attacks.
6. PayPal and Skype Communications: Use a safe and secure payment method such as PayPal when making transactions on eBay and more generally online. Use Skype for communicating with the person you are transacting with. Both provide buyers and sellers with a protected transaction and communications boundary. Avoid going outside of these boundaries when making payments and communicating with other buyers or sellers.

Trading in IT at eBay

eBay uses the following Symantec security technologies and services (part of a Symantec Elite Program agreement):
- Symantec AntiVirus Enterprise Edition
- Symantec Executive Intelligence Dashboard
- Symantec Mail Security 8260 appliances
- Symantec Brightmail AntiSpam
- Symantec Consulting Services
- Security Blueprint Assessment
- PCI Compliance Assurance Service
- INFORM Benchmark Survey
- Altiris Asset Management Solution
- Symantec Business Critical Services
and his team to assess the security posture of the eBay Marketplaces, with results that included identification of strategic IT risk management priorities, development of a roadmap focused on enhancing the security posture, and alignment of business and technology objectives. “The honeycomb in the Security Blueprint Service, which highlights numerous security postures and attributes a risk level to each one, gives us a snapshot of where we are,” Cullinane notes. “It really provides a comprehensive picture of each of the different pieces to the larger security landscape. Not only do I find it useful, but I’ve shown it to the audit committee and to other executives to explain our current security state and our direction over the next year.”

A final area where Symantec Consulting Services helped Cullinane and his team is in the deployment of the Symantec Executive Intelligence Dashboard. And with the first instantiation in place, Cullinane is able to use the dashboard to identify security trends and manage short-term and long-term initiatives more effectively.

Don’t stop the applause
Metrics are becoming a very important way to track progress for Cullinane and his team. “We are doing a lot of metrics-related work right now,” Cullinane reports. “There is malicious code that gets written every day, and it is important that we sustain our predictive security approach. We plan to use that data to determine how best to spend our money to achieve the best level of security, for both the company and our members.”

Indeed, protecting the security of eBay buyers and sellers is at the forefront of what Cullinane and his team do every day. “Our overriding goal is that we want our customers to have confidence in the security of our marketplaces,” Cullinane explains. “There is a great deal of effort that constantly goes into this initiative. We have a team of 2,000 Trust and Safety experts worldwide, all committed to making the sites safe and protecting our users.”

The importance of this responsibility was recently driven home for Cullinane at the eBay Live! 2007 event in Boston, Massachusetts a few months ago. “At the very end of the event there is a Closing Gala with all of the eBay Community,” Cullinane recalls. “As part of that activity, all eBay executives and employees form a ‘clapping tunnel’ and applaud as the attendees enter. However, as the eBay team was going into the room to set up the clapping tunnel, all of the users stood and began clapping for us. It was a really amazing experience!”

Cullinane continues: “Millions of registered users rely on us for selling and trading goods, including some who realize the bulk of their livelihood through trading in our marketplaces. eBay truly makes a huge difference in their lives.”

And with Cullinane and his team at the helm, eBay members can remain confident in the security of their connections with the eBay marketplaces. Indeed, even Remus, the co-founder of Rome who failed to interpret the auspices correctly as to where the city should be built, could predict that the applause will continue.

Patrick E. Spencer (PhD) is the editor-in-chief of CIO Digest and the author of a book and various articles and reviews published by Continuum Books and Sage Publications, among others.

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