The Mimecast Email Security Risk Assessment

Quarterly Report | July 2017

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Many organizations think their current email security systems are up to the task of protecting them. Unfortunately many email security systems fall short and do not keep their organizations safe. The reality is the entire industry needs to work toward a higher standard of quality, protection and overall email security. The proof is in the numbers, and Mimecast is establishing a standard of transparency for organizations and raising the bar for all security vendors.

In working with our more than 26,000 customers, Mimecast has seen firsthand that not all email security systems perform equally well. But, until we started conducting these tests we've lacked the comparative data to prove our perceptions. In order to address this head-on, Mimecast has launched the Email Security Risk Assessment (ESRA).

The Mimecast ESRA has three goals:

1. To test the Mimecast cloud security service against an individual organization's incumbent email security system. To help the organization understand the relative efficacy of the security systems and to see the number, type and severity of email-borne threats that are currently getting into the organization.
2. To inform the security industry with hard data on the effectiveness of various commonly-deployed email security systems.
3. To inform the security industry with hard data regarding the number, type and severity of email-borne threats that are being actively used in attacks.

What is a Mimecast ESRA?

Mimecast uses its cloud-based Advanced Security service to assess the effectiveness of legacy email security systems. The ESRA test passively inspects emails that have been passed by the incumbent email security system and received by the organization's email management system. In an ESRA the Mimecast service re-inspects the emails deemed safe by the incumbent email security system and looks for false negatives, such as spam or malicious attachments.

What We Found to Date

The information we've uncovered is concerning: Email attacks ranging from opportunistic spam to highly targeted impersonation attacks are getting through incumbent email security systems both in large number and type. Let's evaluate the scope of the problem by digging into the aggregated test data that is presented in Figure 1.

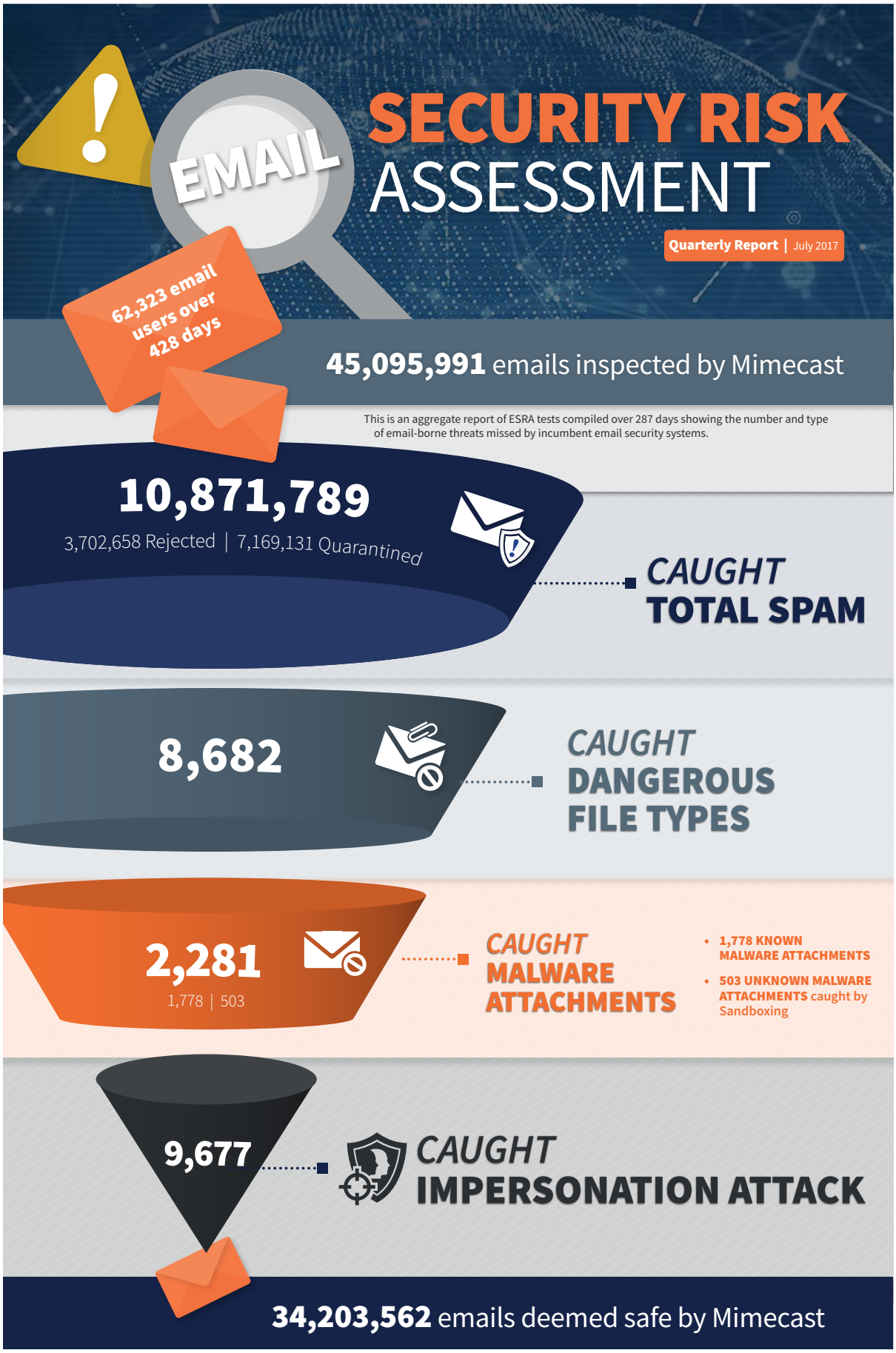


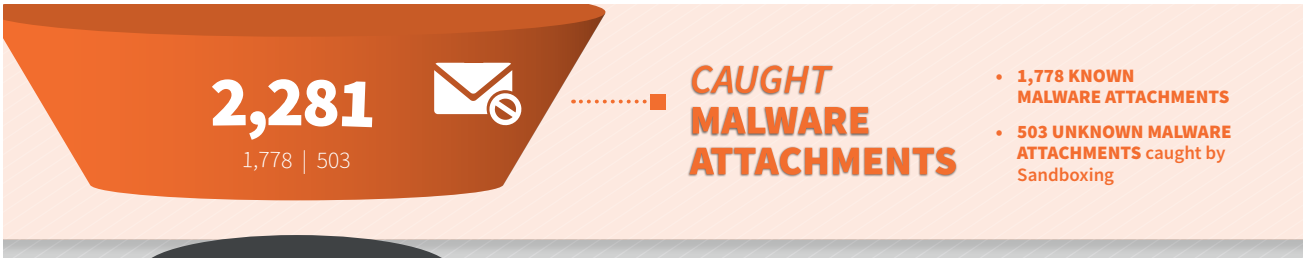
Figure 1 – Aggregated Funnel of ESRA Test Results Completed to Date

Analysis by Inspection Slice

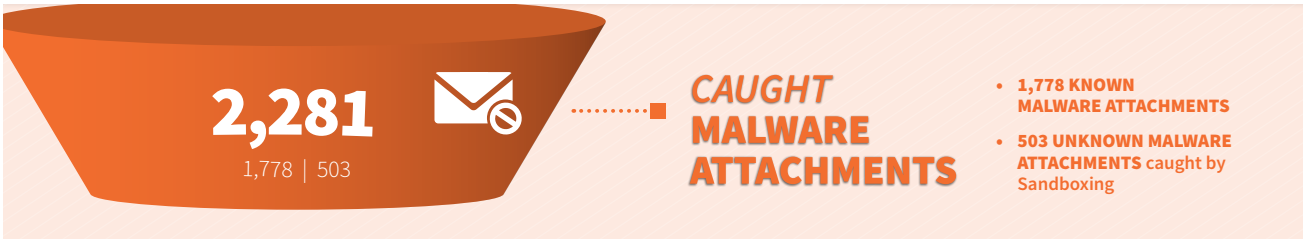
The ESRA testing to date has covered **62,323 email users** over a cumulative **428 days** of inbound email received into the organizations participating in the testing. In this time period more than **45 million emails** were inspected by Mimecast. It is critical to understand that these emails were all passed by the incumbent email security system or cloud security service in use by the particular organization. The Mimecast security inspections occurred passively after the incumbent email security system executed all of its security filters. Overall the Mimecast security service determined that nearly **11 million** of the more than **45 million emails,** or **24.2%, were in fact "bad" or "likely bad."** In other words, the overall false negative rate in aggregate for the incumbent security systems that were tested was **24.2%** of all emails inspected by Mimecast.

Not surprisingly, the vast majority, or **99.8%,** of the false negatives that were passed by the incumbent email security systems and caught by Mimecast were spam email messages. In general, spam email messages are annoying and time wasting, but not lethal. However, as you move down the inspection funnel the lethality of the false negatives increase.

In the next inspection step down **8,682 emails with dangerous file types as attachments** were detected by the Mimecast service, and thus missed by the incumbent email security service. Dangerous file types cover approximately 1,900 file types that are rarely sent via email for legitimate purposes. Examples of these dangerous file types are .jsp (Java Server Pages), .exe (executables), and .src (source) files.



Next, **1,778 emails were determined to contain known malware.** Known malware is a general term for malware which has previously been seen in the wild and is usually, for example, known by malware information sharing services such as Virustotal, and are readily detectable by up-to-date signature-based malware detection engines. Missing known malware is a sign of a significant weakness in the malware detection capabilities of the security system.



Stepping down another level of lethality, in this series of ESRA tests **503 emails which contained unknown malware** attachments were detected through the use of file behavior monitoring technology, generally known as sandboxing. Unlike missing the **1,778 emails** containing known malware, which can generally be caught in a true belts-and-suspenders approach by commonly deployed endpoint-based anti-virus technologies, **missing emails with unknown malware attachments can be very bad**. This is because unknown malware will generally not be blocked by commonly used endpoint anti-virus technology. These false negatives will likely result in the attacker gaining or extending his foothold in the organization.

Now to the final ESRA inspection step, the **9,677 false negative emails which are characterized as impersonation attempts** that were missed by the incumbent email security systems. Impersonation emails, as the name implies, are emails which generally carry neither malware nor malicious URLs, and are difficult to detect. Impersonation emails are social engineering heavy emails that attempt to impersonate a trusted party, such as a C-level executive, employee or business partner, with the goal of prompting the recipient to do something they shouldn't. Examples of this are sending wire-transfers, W-2s, or other sensitive and valuable data to the fraudster under the guise of some business process.

Benefits of the Mimecast ESRA Program

The Mimecast ESRA can help participating organizations better understand the email-borne threats that are getting through their current defenses, giving them a sense as to the number and types of attacks to which they are likely vulnerable.

For the security industry in general, the aggregated data that is provided by running a series of ESRA tests across multiple incumbent security technologies provides tangible, quantitative evidence of the strengths and deficiencies of commonly used email security systems. This helps alert organizations to the types of attacks that might be circumventing their existing security defenses.

Over time as Mimecast executes more ESRA tests, the security industry will receive more tangible evidence of email threats and the effectiveness of security defenses. This data will be reportable by vertical industry, incumbent email security system, and even by the geographic location of the organizations as more tests are completed.

How an ESRA test works

Figure 2 below shows the basic setup and email for an ESRA test.

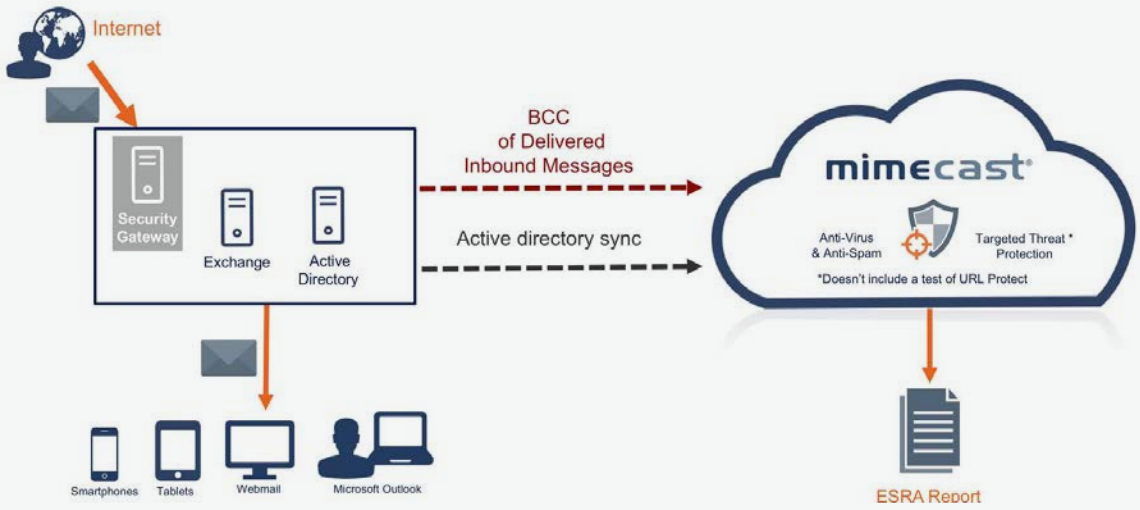


Figure 2 – Architecture and Email Flow of an ESRA Test

- The organization that is taking part in the ESRA test provides access to inbound emails after they have been inspected and filtered by their incumbent email security system. These emails are not manufactured or specially sent for the test, but are the actual emails being received by the organization during the test period. It doesn't matter whether their current security or email management system is deployed on-premises or in the cloud.
- The Mimecast service gets a stream of BCC copies of emails that have been delivered to the organization's email management system and thus passed by their incumbent email security system.
- The Mimecast security service inspects these emails for spam, malware attachments and impersonation attacks that have been missed by the incumbent email security system.
- The testing period usually runs from 14 to 30 days.
- At the end of the test period a customized ESRA report is provided back to the organization participating in the test.
- The data is collected, anonymized and aggregated for use in reports such as that which is represented in Figure 1 and which is discussed in this paper.

Conclusion

While many organizations erroneously think their current email security systems are up to the task of protecting them, in particular from today's more sophisticated, well-resourced and targeted attackers, the Mimecast ESRA takes an important step to proving this to be wrong. Mimecast, as part of our commitment to improving security in general, and email security in particular, commits to continuing our ESRA tests. As we collect more data from more individual tests, we commit to update the security industry on what we are seeing. Ultimately the email security industry needs to be driven by data and not vague claims and generalizations to more effectively protect customers and to improve the security industry's overall performance.