Welcome to the 11th International Conference on Malicious and Unwanted Software (MALCON 2016).

In the past, the security protection model that most organizations applied to protect their infrastructure was simply the "Everything but the Kitchen Sink" model—meaning, add devices that protect the enterprise network perimeter (Trusted Zone), add devices that protect your mobile device, add devices that protect your data base., and on, and on .... In essence, this model simply amounted to the accumulation of security devices. Given the increased number, scope, and frequency of breaches, it is clear that this model has failed.

In addition, the idea that cyber-attacks can be stopped at the periphery of the network has become a fool's errand. In today's Cloud Computing model, and cyber-threat landscape, individuals as well as corporations have recognized the fact that (i) threats are often distributed both in time and space, making detection extremely difficult, and (ii) the working assumption is not that you can prevent infections (the goal of 100% prevention is no longer practical), but rather, given that your "system" will be compromised, how quickly can you detect the breach and how do you minimize the impact of such an event?

Given such an environment, one quickly comes to the realization that security products are no longer about single or even multiple independent security devices each providing close as they can standalone protection. Rather, information from all your security products and services needs to be correlated, scrutinized and transformed into wide-angle actionable information applicable to your specific enterprise environment. We call this approach the “Fabric of Security”. This approach has led to the specification of several new (and revived) security architectures. Some are “open” (e.g., Blue Coat Open Architecture) while others are more proprietary, such as the Security Control Framework (SCF) and SAFE architectures from Cisco.

Within this context, the conference organizers have designed the conference to highlight the technical, political, and organizational challenges present in the design and deployment of such new "Fabric of Computing" architecture. We trust that the manuscript and subsequent discussion will illuminate in some way the key challenges of this novel approach to security where stand-alone products no longer dominate but rather distribution, and aggregation of information becomes the dominant success factor.

Finally, it has been a true pleasure to serve as General Chairman and to work with such a dedicated group of individuals who managed to put together a program covering all of these challenges. Very special thanks are due to the chairs of the Technical Program Committee Dr. Anthony Arrott and Prof. Arun Lakhotia. I thank the TPC chairs and all the members of the Technical Program Committee for their time and efforts in reviewing the manuscripts, providing feedback to the authors and for managing a very arduous process. Thank you.

I look forward to seeing all of you at the conference.

Dr. Fernando C. Colon Osorio
Malware 2016 General Program Chair
Message from the Technical Committee Program Chairs

This volume contains the proceedings of the 11th International Conference on Malicious and Unwanted Software (MALCON 2016). This year, the conference is built on the success of previous editions: Fajardo, Puerto Rico (2011-2015), Nancy, France (2010), Montréal (2009), Washington DC (2008), New Orleans (2007), and Phoenix, Arizona (2006), and others. In recent years we have continued to hold the conference at El Conquistador due to the overwhelming request by all the attendees; who seek a familiar and relaxed environment, surrounded by familiar faces, picking up conversations where they were left last year. Therefore, coming back to Fajardo, Puerto Rico honors that tradition.

We the chairs of the Technical Program Committee, continue to be proud of our unique traditions, that of bringing together researchers from both industry and academia. The malware threat landscape moves so rapidly that, in the absence of interactions with industry, an academic may continue to work on a problem that is no longer relevant or, even if it is relevant, his/her solution may sit in published proceedings and never come to the attention of those in industry who can put it to valuable use. This forum brings together the two viewpoints of scholarly research and industry problem-solving to a single place with a single track that makes the Q&A after each presentation an ongoing discussion and exploration of what is most relevant in Malware research today. The confluence of the mighty Atlantic Ocean and the Caribbean Sea in the background serves as a metaphor and provides the right environment for the meeting of industry and academia.

While the atmosphere at MALCON conference is relaxed, its process of accepting papers is not. This year 46 papers were submitted to the Research Track of which 14 were selected. The papers were evaluated on the basis of their scientific merit, novelty, contributions to the field, and technical quality. To ensure reviewers’ concerns were addressed, the final version of some of the accepted papers were directly supervised by one of the member of the technical program committee.

Many people helped to make this year’s conference a success. We are grateful to the technical program committee members and the other reviewers who put forward their efforts in recruiting papers, reviewing submissions, and improving the conference quality and impact year by year. They reviewed numerous submissions and provided helpful feedback to the authors. We would also like to thank all of the authors who submitted papers. After all, it is the authors above all who make a conference successful. For those authors whose papers were not selected, we sincerely hope that reviewers’ comments were helpful.

Our special thanks to Dr. Fernando C. Colon Osorio, the general chair of the conference who has driven the culture of “intimacy and candor” that makes MALCON stand apart. He brings amazing passion, energy, and drive that is so difficult to match and that is responsible for the success of the conference through the years. We are also thankful to him for opening up Puerto Rico, his home, to us and sharing with us his culture and heritage.

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